

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The Mining Journal is Registered at the General Post Office as a Newspaper and for Transmission Abroad.]

No. 2398.—Vol. LI.

LONDON, SATURDAY, AUGUST 6, 1881.

[WITH SUPPLEMENT.] PRICE SIXPENCE PER ANNUM, BY POST £1 4s

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER.
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value.
Every Friday a general and reliable List issued (a copy of which will be forwarded regularly on application), containing closing prices of the week.

MINES INSPECTED.
BANKERS: CITY BANK, LONDON—SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—
40 Almada, 6s. 20 Richmond, £17½.
30 Carnarvon Cop., 20s. 10 Roman Grav., £11 16 3
40 Colorado, £23½. 50 Marke Valley, £1 3s 9
25 Devon Con., £8 17s 6d. 50 Morla Du, 13s. 9d.
25 Derwent, £1 5s. 10 S. Condurrow, £2½.
75 East Caradon, 18s. 9d. 100 North D. Freshy.
60 East Caradon, 18s. 9d. 50 N. Penstruthal, £1 8s 9
20 E. Roman Grav., 15s. (cal. paid)
20 East Van, £1 3s. 9d. 40 N. Wye Valley, 10s 6
70 E. W. Rose, off. wntd. 30 Pandora, 11s.
50 Frontino, £4. 100 Polrose, offer wanted.
50 Glenrock, £1 16s. 3d. 50 Port Phillip, 8s.
50 Glenroy, 9s. 50 Potosi, 23s. 9d.
10 Grogwinlon, £2½. 25 P. of Wales, 13s., c.p.
10 Herodsfoot, 11s. 100 Parys Cop., 6s. 6d.
50 Hington Down, £13 9 30 Pestarena, 6s. 6d.
50 Javali, 5s. 30 Ruby, £7.

* * SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

BUYER OF CAMBRIAN MINE SHARES.

RAILWAYS—SPECIAL BUSINESS.
FOREIGN BONDS—SPECIAL BUSINESS.
AMERICAN STOCKS AND SHARES—SPECIAL BUSINESS.
Fortnightly accounts opened on receipt of the usual cover in these and all Stock Exchange Securities.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.
ESTABLISHED 1842.

INDIAN GOLD MINES.—SPECIAL BUSINESS in:—

Devala Moyer. Indian Kingston.
Devala Central. Indian Phoenix.
Great Southern Mysore. Indian Trevelyan.
Indian Glenrock. Mysore. Tambercherry.
Ooregum. Wynaad Perseverance.

At CLOSE MARKET PRICES, free of commission.
* * Reliable information given on any of the above. A daily price list issued giving closing quotations. SPECIAL BUSINESS in Frontino and Bolivia Potosi, Ruby, Nouveau Monde, and Richmond.

* * SHARES IN THE ABOVE INDIAN OR OTHER GOLD AND SILVER MINES SOLD FOR FORWARD DELIVERY ONE, TWO, OR THREE MONTHS ON DEPOSIT OF TWENTY PER CENT.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER
44, THREADNEEDLE STREET, LONDON, E.C.
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES AND MISCELLANEOUS SHARES of every description.

RAILWAYS, BANKS, FOREIGN AND COLONIAL BONDS.

TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.

Accounts opened for the Fortnightly Settlement

A List of Investments free on application.

MR. BUMPUS has SPECIAL BUSINESS in the undermentioned:—

75 Almada, 6s.	35 East Caradon, £1.	25 New Trumpet.
20 Arendal, £2 15s.	50 Eberhardt, 11s. 3d.	5 Penhall, 23s.
50 Bratsberg, 37s. 6d.	40 East Van, 27s. 6d.	100 Port Nigel, 36s.
100 Bodirris, 20s.	20 Frontino, £4 1s. 3d.	50 Parys Copper, 12s. 6d.
5 Blue Hills, £2½.	5 Great Laxey, £18½.	100 Port Phillip, 8s. 3d.
50 Callington Consols, 37s. 6d.	50 Goodereve, 22s. 6d.	50 Potosi, 23s. 9d.
15 Copiapo, £2 13s. 9d.	20 Great Holway, £5½.	70 Pen-yr-Oreid, 23s. 6d.
100 Carnarvon, 19s.	100 Glenroy.	20 Panulicillo, £5 6s. 3d.
100 Chontales, 2s. 6d.	100 Hington Down, 25s.	50 Rhodas Reef, 17s. 6d.
2 Cape Copper, £43½.	80 Hungarian Copper, 12s.	50 S. Indian, £2.
40 Colorado, £2 10s.	100 Indian Glenrock, £1½.	5 Tincroft, £17½.
50 Derwent, £1½.	20 Leadhills, £1½.	40 Tankerville, 10s.
2 Dolcoath, £70.	100 Last Chance, £1.	3 Van, £28½.
75 Devon Friendship, 20s.	150 La Plata, 26s. 3d.	50 West Goldolphin, £2.
15 Devon Consols, £2½.	40 Marke Valley, £1 5s.	20 Wheel Sisters, 30s. 6d.
60 Devala-Moyer, £1 13	30 North Penstruthal, 10s.	50 Wheel Jewell, 14s.
	100 Nouv. Monde, 19s. 6d.	50 West Polbreen, 29s.

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

Mr. BUMPUS devotes special attention to these Securities, and is in a position to afford reliable information and advice to intending investors and others.

IMPORTANT TO INVESTORS.—The position of the TIN market is steadily improving, and in all probability there will be a considerable advance in the price of this metal very shortly.

Shares in SOUND TIN MINES should, therefore, be bought at present prices, as many of them are likely to have an early and substantial rise.

The following are particularly recommended:—

WHEAL GRENVILLE. NEW TRUMPET CONSOLS.
WEST GODOLPHIN. NEW PEEVOR.
WHEAL KITT. WHEAL BOYS.
WHEAL AGAR. NEW KITT.
WEST POLBREEN. GOODEVERE.

WILLIAM HENRY BUMPUS, SWORN BROKER.

OFFICES: 44, THREADNEEDLE STREET, LONDON, E.C.

ESTABLISHED 1867.

MR. W. TREGELLAS, 40, BISHOPSGATE STREET WITHIN, E.C.
Deals in all descriptions of STOCKS AND SHARES at close market prices, and is always in a position to do business in GOLD HILL, SANTA BARBARA, PITANGUI, and BRAZILIAN GOLD MINES.

MR. GEORGE BUDGE, STOCK AND SHARE DEALER
9, GRACECHURCH STREET, LONDON, E.C. (Established 23 years).

ALL BUSINESS TRANSACTIONS FREE OF ANY CHARGE FOR COMMISSION.

Notice to Investors and Speculators.

MR. BUDGE has DEALINGS in:—
40 Bedford United. 100 Gold Coast. 100 Port Phillip.
100 Brazilian. 25 Gunnslake (Clitters') 100 Potosi.
100 Cherambadi. 15 Hington Down. 50 Polrose.
30 Carnarvon. 50 Indian Trevelyan. 50 South Devon.
100 Carn Brea. 110 Javali. 100 Sentein.
100 Dingley Dell. 30 Kit Hill. 45 South Darren.
70 Don Pedro. 75 Kapanga. 100 Tankerville.
50 Drake Walls. 20 Lead Hills. 5 Tincroft.
150 Devala Moyer. Lady Ashburton. 100 Tambercherry.
100 Eberhardt. 10 Miners. 100 West Caradon.
100 East Hill. 55 New KITT. 100 West Polbreen.
75 East Roman Gravel. 60 New Peavor. 100 Wheel Agor.
20 Frongoch. 100 Pandora. 40 Wheel Coates.
50 Ganton. 50 Parys Copper. 100 Wheel Jewell.
60 Glenroy.

BRITISH AND FOREIGN MINING OFFICES.

MESSRS. PETER WATSON AND CO.,
18, AUSTIN PRIARS,
OLD BROAD STREET, LONDON, E.C.
BANKERS: THE ALLIANCE BANK (Limited).

MESSRS. PETER WATSON AND CO.'S
BRITISH AND FOREIGN MONTHLY MINING NEWS
—STOCK AND SHARE INVESTMENT NOTES—MINES,
MINERALS, AND METAL MARKETS—SHARE LIST,
No. 832, Vol. XVI, for JULY month, will shortly be ready,
and will be sent to customers on application.

Annual Subscription..... 5s. | Single Copy..... 6d.

MESSRS. PETER WATSON AND CO.,
18, AUSTIN PRIARS, E.C.

MR. ALFRED E. COOKE,
DEALER IN BRITISH AND FOREIGN STOCKS AND SHARES
OF EVERY DESCRIPTION.
75, OLD BROAD STREET, LONDON.
ESTABLISHED 1853.

SPECULATION OR INVESTMENT. SHARES IN ESTABLISHED MINES at LOW PRICES should be bought at once.

Shares in all the LEADING GOLD, TIN, COPPER, and LEAD MINES on BETTER TERMS than those advertised.
Orders by telegram executed immediately at NET PRICES FREE OF COMMISSION.

ADVERTISING SHARES AT FIXED PRICES.
This system is PERNICIOUS and MISLEADING; and, in the opinion of the majority of the Members of the Mining Market, such advertisements should be refused by the Editor of the Mining Journal.

NEW COMPANIES—CAUTION TO INVESTORS.

GREAT WHEAL POLGOOTH.

The Master of the Rolls asserts that this company is "nothing but a swindle." There are many mines which are no better, but scarcely one of the many mines introduced during the past few months, and so much puffed up by "Circular-mongers," has been promoted by any MEMBER of the MINING MARKET.

Most of the shares are now unsaleable, and with the existing liability cannot be given away. When at £1½ prem., Mr. COOKE was the first to WARN the PUBLIC against EAST WHEAL ROSE.

NORTH WALES COPPER.

A capital of only a QUARTER of a MILLION STERLING is required!!! In order to save loss, those who may have already applied for shares on the exaggerated statements in the prospectus, should withdraw their applications. It is to be regretted that newspaper editors are not independent and fearless enough to discourage such undertakings.

Seek advice before subscribing to any new company from any well known broker or dealer.

WEST KITT.

The Mine looks well, but is not yet paid for. Before any dividend can be paid to the shareholders, nearly £400 per month profit must be made for 12 months. After this a similar profit must be made to pay 10 per cent. per annum at present price of shares. Can this be done?

ALFRED E. COOKE, 75, OLD BROAD STREET, LONDON.
(Established 1853.)

STOCKS AND SHARES, FOREIGN BONDS, TELEGRAPHS, TRAMWAYS, RAILWAYS, AND OTHER LEADING SECURITIES.

MR. JAMES STOCKER, STOCKBROKER,
2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.

Special Business at close prices in all British, Colonial, and Foreign Mine Shares.

BANKERS: LONDON AND WESTMINSTER.

JOHN B. REYNOLDS, STOCK AND SHARE DEALER,
37, WALBROOK, LONDON, E.C.

ESTABLISHED 25 YEARS.

BANKERS: LONDON JOINT STOCK.

Mining Shares of all descriptions Bought and Sold at net prices.

Reliable information procured on moderate terms.

For information concerning West Kitt, West Polbreen, Dolcoath, Wheel Agor, Carn Brea, South Frances, West Poldice, New Kitt, &c., &c., see Mr. REYNOLDS'S remarks on page 556.

FERDINAND R. KIRK, STOCKBROKER,
5, BIRCHIN-LANE, LONDON, E.C.

Fortnightly Accounts opened in all Stock Exchange Securities on receipt of the usual cover.

BANKERS: LONDON AND WESTMINSTER, Lothbury.

MR. E. J. BARTLETT, BRITISH AND FOREIGN STOCK
AND SHARE DEALER, No. 30, GREAT ST. HELEN'S, LONDON, E.C.

Now ready, Fifteenth Edition, enlarged to 100 pages, post free 1s.

HOW TO INVEST.—No one should invest either large or small sums without first reading this work.

"More valuable than ever."—Vide Public Press.

HORACE J. TAYLOR, STOCK AND SHARE DEALER,
(Late of the PORT PHILLIP AND VICTORIA (London) MINING COMPANIES, Limited.)

38, GREAT ST. HELEN'S, LONDON, E.C.

BANKERS: The CENTRAL BANK OF LONDON (Limited).

MR. JOHN RISLEY, STOCK AND SHARE BROKER,
38, CORNHILL, LONDON E.C.

ESTABLISHED 20 YEARS.

WEST CARADON, PARYS, POLROSE, NEW WEST CARADON, WEST CREBOR, and SORTRIDGE COPPER specially recommended.

SHARES BOUGHT OR SOLD ON COMMISSION.

MR. THOMAS THOMPSON, JUN., STOCK BROKER,
16, ST. SWITHIN'S LANE, E.C.

Mr. THOMPSON transacts business in every species of Stock Exchange and Mining Securities.

Mr. THOMPSON affords reliable information to investors, and can give when desired, a list of first-class Stocks and Shares, yielding 4 to 10 per cent. dividends upon present prices.

Mr. THOMPSON'S weekly Circular may be had on application.

MR. W. MARLBOROUGH, STOCK AND SHARE DEALER,
29, BISHOPSGATE STREET, LONDON, E.C.

Can SELL the following SHARES at prices annexed:—

25 Bedford Unit, £1½.	50 Grogwinlon, £2.	50 Pandora, 15s.
25 Birdseye Creek, £1½.	50 Hoover Hill, £1 4s.	75 Pestarena, 6s. 3d.
75 Brazilian Gold, 18s. 9	50 Indian Kingston, 20s.	25 Parys Corporation.
55 Blwich United, 37s. 6d.	40 Indian Glen., £1 16s 3	50 Rhodes Reef, 20s.
25 Carn Brea.	25 Indian Phoenix, £1 8s 9	200 Rossa Grande, 4s.
25 Carnarvon, 20s.	25 Indian Trevel., £1 3s 9	25 South Devon, £1½.
50 Chontales, 3s.	100 I. X. L., 3s. 3d.	40 Tamar Silver-Lead.
25 Dev. Friendship, 20s.	100 Kapanga, 7s.	50 Tin Hill, 20s.
50 Don Pedro Gold, 11s 6	50 Kit Hill, 17s.	40 Van Consols & Glyn
10 Devon Con., £9.	50 Lady Ashburton.	United, 5s. 9d.
40 English-Australian.	50 La Plata, £1 6s. 3d.	75 Van Consols and Glyn
100 Exchequer, 3s. 3d.	50 Marke Valley, £1 5s.	Pref., 14s.
25 East Caradon, 21s.	50 New Peavor, 22s. 6d.	
(call paid).	50 Nouveau Monde, 20s.	
30 Flagstaff, 11s.	50 N. Trumpet Con.	
50 French Date Coffee,	25 No. Herodsfoot, 12s. 6	
(15s. paid), 8s. 6d.	75 Potosi, £1 6s 3d.	
	50 Prince of Wales, 15s.	

THE "DIFFERENTIAL" PUMPING ENGINE
(DAVEY'S PATENT),

FOR
DRAINING MINES, WATER SUPPLY OF TOWNS, IRRIGATION,
SUPPLYING DOCKS, PUMPING SEWAGE, and GENERAL
PUMPING PURPOSES.

HATHORN, DAVEY, AND CO.,
LEEDS.

HATHORN, DAVEY, and Co. have Patterns of "Differential" Engines of all sizes, from 5 to 500-horse power, and have facilities for supplying very powerful Engines and Pumps at a short notice.

See Illustrated Advertisement every alternate week.

MR. CHARLES THOMAS,
MINING AGENT, STOCK AND SHARE DEALER,
3, GREAT ST. HELEN'S, LONDON, E.C.

MR. ALFRED THOMAS,
MINING AGENT, AND STOCK AND SHARE DEALER,
10, COLEMAN STREET, LONDON, E.C.

WANTED TO PURCHASE, the following Shares:—Lisburne, Roman Gravel, and Tamar. Sellers state lowest price.
MINING INVESTMENTS.—Second Edition, just published.
"What to Select, and What to Avoid," by ALFRED THOMAS, 10, Coleman street, London, E.C. Will be forwarded on receipt of 12 stamps.

MR. EDWARD ASHMEAD, 2, DRAPER'S GARDENS, E.C.,
MINING SECRETARY, AUDITOR, AND ACCOUNTANT.

THOMAS B. LAWS, STOCK AND SHARE DEALER,
AND MINE ACCOUNTANT,
2, CHURCH COURT, CLEMENTS LANE, LONDON.

MR. CHARLES J. SIMS,
MINING AGENT, STOCK AND SHARE DEALER,
2, DRAPER'S GARDENS,
LONDON, E.C.

MESSERS. ABBOTT AND WICKETT,
STOCK AND SHARE BROKERS, REDRUTH.
ORDERS BY TELEGRAM PROMPTLY EXECUTED.

JOHN BANTING ROGERS, STOCK AND SHARE DEALER,
ST. CLEMENT'S HOUSE, LOMBARD STREET, LONDON.

COMPANY WRECKERS, MENDICANT DEALERS, AND
DISAPPOINTED "BEARS."

CAUTION TO SHAREHOLDERS IN TAMAR, SOUTH WHEAL
CREBOR, AND GREAT POLGOOTH UNITED.

A dastardly attempt is being made by certain parties to depreciate the value of your properties by quoting shares in the above Mines at about half their actual value, and by giving holders gratuitous advice to "sell out and save further loss."

At the same time holders in SOUND AND VALUABLE INDIAN GOLD MINES are also advised to sell their shares, and are asked to buy shares in OBSCURE GOLD MINES IN SOUTH AMERICA, formed with a capital barely sufficient to provide the machinery and 12 months working expenses, unless the company were presented with the property by a philanthropic vendor. The same parties urge investors to buy shares in COST BOOK MINES, with UNLIMITED LIABILITY, at tempting prices, but which may cost them TWENTY-FOLD THE AMOUNT IN CALLS. Weststrongly urge shareholders in the mines thus sought to be depreciated by parties who, we believe, have SOLD SHARES THEY CAN NOT DELIVER, to treat their gratuitous advice with the contempt it deserves, or, take a more effective course and BUY THE SHARES at the prices quoted by these individuals and INSIST UPON DELIVERY. By this means they will uphold the value of their shares, and burn the fingers of those who hope to fatten upon such discreditable business. There are about 600 shareholders in the Tamar Mine, if, for instance, every shareholder bought only 10 shares each at the prices these people quote, it would represent about 6000 shares, and such a demand could not possibly be met. If only 1000 were applied for through these people (or more respectable dealers) we feel convinced that even this SMALL DEMAND would cause the price of shares to DOUBLE IN PRICE, and make these gentry pay dearly for their temerity if delivery is insisted upon.

N.B.—We think it advisable to state that the Great Polgooth United Tin Mines Company (Limited) are in no way connected with the Great WHEAL Polgooth.

ENDEAN AND CO., STOCK AND SHAREDEALERS,
85, GRACECHURCH STREET, LONDON, E.C.

MR. W. B. COBB, STOCK AND SHARE DEALER,
22, BISHOPSGATE-STREET, LONDON, E.C.

BANKERS: ALLIANCE BANK (Limited).

MESSERS. WRENN AND CO., SWORN BROKERS
AND MINING SHARE DEALERS,
13, CROSBY HALL CHAMBERS, BISHOPSGATE STREET, E.C.

Established over Thirty Years.

Business transacted in every description of Stocks and Shares at closest market quotations.

SEVERAL GOOD INVESTMENTS NOW ON HAND.

MESSERS. J. TAYLOR AND CO.,
MINING ENGINEERS AND INSPECTORS,
86, LONDON WALL, LONDON, E.C.

Have Agents in the various Mining Districts of Great Britain, the Continent, Australia, and the United States of America.

Inspections undertaken, either personally or by our Agents, and Reports or Advice as to Working given.

CARTER AND CO., STOCK AND SHARE DEALERS,
8, UNION COURT, OLD BROAD STREET, LONDON.

Know of two or three Mines well situated and well managed, having abundance of mineral, which they can strongly recommend to intending investors for a substantial rise, and for good dividends.

Those desirous of making a good investment will do well to write to CARTER and Co. for particulars.

JOHN THOMAS, STOCK AND SHARE BROKER.
(On commission only.)

Mines inspected and faithfully reported on. Mining Machinery valued.

Estimates given for the erection of Mining Plant.

Twenty Years' Experience.

Advice given as to Buying or Selling Mine Shares.

ADDRESS—REDRUTH, CORNWALL.

FRANCIS FRANCIS, M.E.
STOCK AND SHARE BROKER,
CORN EXCHANGE CHAMBERS, CHESTER.

Specially advised for immediate investment, the HALKYN DISTRICT MINES DRAINAGE COMPANY (presided over by HIS GRACE THE DUKE OF WESTMINSTER), and allied Mines, THE RHODESMOR, &c. Thoroughly reliable.

Also, PITANGUI (Gold), SANTA BARBARA, BRAZILIANS, FRONTINOS, and POTOSI.

MR. JOHN L. M. FRASER,
(18 Years' Experience at the Great Miners and other Mines.)
CONSULTING MINING ENGINEER, &c.
GREENFIELDS, WREXHAM.

Visits the principal Mines in North and South Wales, Devon, and Cornwall Reports from £3 3s., and expenses. Mines Managed and Secretarial from £150 per annum, including office and clerks.

SPECIAL BUSINESS in BRITISH SILVER-LEAD and PANT-Y-MWYN MINES, which are daily open to inspection, and will command a good premium, as no doubt exists as to the enormous quantity of rich ore they contain.

Gold, Silver, Lead, Copper and Tin Mines and Collieries, supplied with Machinery, Plant, Materials, and Stores of every description. Prices on application.

NEWFOUNDLAND TO MANITOBA.

That the whole of British North America is worthy of careful prospecting for minerals has been frequently urged in the *Mining Journal*, and the constantly extending area proved to be adapted for mining enterprise is perhaps the greatest encouragement that could be offered. An opportunity is now afforded for all to acquire more detailed information on the subject from the very interesting volume* by Mr. W. FRASER RAE, just published by Messrs. Sampson Low and Co. The basis of the work is a series of communications describing the province of Manitoba written by Mr. Rae as a correspondent of the *Times* in 1878, but these have been so enlarged and remodelled that they may be regarded as entirely new—they embody the fresh particulars which he has gathered during a more recent visit made last autumn and winter across Newfoundland to Halifax, thence to Rapid City on the Little Saskatchewan, and from the Red River of the North in Manitoba to the Rio Grande in New Mexico. The historical and travelling details are highly interesting, but there are so many references to mining matters that these must be very hastily passed over. It appears that even Parkhurst, who visited Newfoundland in 1578, "believed that island to be rich in minerals," and such was Sir Humphrey Gilbert's confidence in this mineral wealth that he believed he could persuade Queen Elizabeth to lend him 10,000l. to prosecute his enterprise in the following spring. As to the present mining position of the province it is remarked that in the brief space of five years Newfoundland has risen to the sixth place among the copper producing regions of the globe. Other minerals have been discovered in sufficient quantities to justify their extraction; these include gold and silver, nickel, lead, and iron. Coal beds of vast extent though known to exist have not yet been worked.

Turning to the land of the Blue Noses and home of Sam Slick, Mr. Rae remarks that it has been proved to demonstration that the gold fields are as rich and as safe investments as the coal pits from which adventurous natives and English capitalists have derived large profits. The Nova Scotian capitalist hesitates to take shares in a gold mine. When a gold mine of undoubted richness is discovered and tested it usually passes into the hands of a shrewd and enterprising United States capitalist, and when the Nova Scotians see him becoming rich by his venture they blame Confederation or the Government for marrying the prosperity of their province. From the year that the extraction of gold began down to the present time the total yield has been 397,372 ounces. Last year 14,000 ounces were returned. The average earning of each miner has exceeded \$600 annually. Yet the waste of extracting the gold is enormous. It is indisputable that a yield of 5 dwts. per ton is ample for paying the miner who uses the most improved machinery and follows the most modern processes. Mr. Selwyn, the Director of the Geological Survey of Canada, shows that in Nova Scotia many mines are wasting as much gold as would suffice to return dividends of 10 per cent. in Victoria, and the machinery in the Australian mines do nearly double as much as that employed in the Nova Scotian. It is clear that skill and proper machinery are lacking. Were the Nova Scotian gold mines properly developed they would take rank amongst the most remunerative, favourite, and stable investments of the province. The gold-bearing region of Nova Scotia extends over 3000 square miles. The coal and iron of Nova Scotia are also fully referred to.

The province of New Brunswick, Prince Edward Island, the Intercolonial, Grand Trunk, and Northern railways, and the chapter "Across Lake Superior," has interesting references to the Bruce Mines, Michipicoten Island, discoveries of copper, value of native copper, copper mining companies, mineral riches, silver, copper, and iron deposits. As many British capitalists are interested in the mines of this region this chapter will be especially appreciated. The journey from Duluth to Winnipeg is next described, and there is no good account of the Red River of the North, the City of Winnipeg, the province of Manitoba, the Mennonites and Icelanders in Manitoba, the North West Territories, and the Canadian Far West. The book is ably written, highly attractive, and admirably illustrated with three maps and two illustrations of Winnipeg—the Chicago of Canada—in 1870 and at the present time; and will without doubt be very widely read.

* "Newfoundland to Manitoba: a Guide through Canada's Maritime, Mining and Prairie Provinces." By W. FRASER RAE. London: Sampson Low, Marston Searle, and Rivington, Fleet-street.

MANUAL OF PRACTICAL ASSAYING.

The changes which have taken place in the views entertained regarding the importance of technical knowledge for the successful development of industrial undertakings since John Mitchell wrote his *Manual of Practical Assaying* have been marvellous, yet that he fully comprehended what was required and succeeded in providing it may be assumed from the manner in which the work has maintained its ground for 30 years. The fifth edition* having now become necessary it will suffice to ascertain whether it has been made to accord with present knowledge, and in this respect the most exacting will be satisfied. Without in any way departing from the original system of the work, Mr. Crookes has given his readers the advantage of every improvement in practice or advance in discovery connected with the subject since the issue of the previous edition. The rapid progress of chemical science has, of course, rendered the number of necessary alterations large, and as the design of the book is to give only the most convenient and reliable process adapted to the cases likely to arise in practice numerous changes are observable in this respect also. In the result he has produced a volume which will retain its attractions among practical assayers, and be alike useful to those who have ample chemical knowledge and those who are somewhat deficient of it.

The character of the work is so well known that most students in the assayer's laboratory will require little information concerning it; it may, however, be mentioned that the utmost care is taken to treat the subject in the order in which the information will be required in actual practice. Chemical nomenclature, the laws of combination, and chemical symbols are sufficiently explained in the first half-dozen pages to enable the reader with very little chemical knowledge to utilise the remainder of the book. In the second chapter he is given ample instruction as to the preparation of the sample, the choice and use of the pestle and mortar, the sieve, and details as to elutriation, washing, dressing or vanning, the balance, weights and method of weighing, the student being taught from the first how to attain quickness and accuracy. The general preparatory chemical operations are next dealt with, the nature and object of calculation with the several descriptions of ore, roasting, reduction, solution, distillation, and sublimation, each being briefly but clearly explained. In connection with the production and application of heat the construction of the various kinds of furnaces—calcining, evaporating, fusion, wind, blast, and muffle furnaces—is described, as well as the relative merits under varying circumstances of coke, charcoal, oil, and gas; and as an instance of the lateness of the information given it may be mentioned that even the new melting arrangements and the solid flame burners just introduced by Thomas Fletcher, of Warrington, are duly referred to in their proper place. Lutes and cements, crucibles, cupels, and scorifiers are fully referred to in this chapter. The assay and analysis of fuel next receive consideration, the readiest methods of determining its absolute heating power, the quantity of ash, sulphur, the examination of other peculiarities of fuel, the calculations of results, the valuation of coal for the production of illuminating gas and so on, being in turn explained. Reducing agents, oxidising agents, desulphurising reagents, sulphurising agents, non-metallic fluxes and metallic fluxes are treated of in the next chapter; and in the seventh chapter nearly 100 pages are devoted to the blow-pipe and its use, including an admirable account of the principal minerals likely to be met with. In the chapter on volumetric analysis the principle of this process is explained, and the reactions, standard solutions, instruments, and apparatus and modes of operating described.

The remaining chapters treat of the assay of iron, copper, lead, tin, antimony, zinc, mercury, silver, gold, platinum, bismuth, chromium, and cobalt. The book is a most valuable and complete work.

* "A Manual of Practical Assaying." By JOHN MITCHELL, F.C.S. Edited by WILLIAM CROOKES, F.R.S. Fifth Edition. London: Longmans, Green, and Co.

mium, arsenic, manganese, nickel, and cobalt, and sulphur respectively, so that when the book is referred to in the laboratory the information sought can be at once obtained free from all confusion. The 25th chapter deals with the discrimination of gems and precious stones. By way of appendix a series of valuable and practically valuable tables is given, and an excellent index renders the book as near as may be perfect. The new edition will certainly maintain for the work the high reputation it has hitherto enjoyed.

GAS, AND ITS FUTURE.

The fear which has been expressed that by electricity replacing gas for general illumination has fortunately been accompanied by the admission that its more extended use for cooking purposes may prove an ample compensation; and the improvements introduced by Mr. THOS. FLETCHER, of Warrington, seem to justify this view. His improved solid flame burners were noticed in the *Journal* a few weeks since, and the further testing of them bears out all that has been said in their favour. The Welshpool Gas Company recently held an interesting exhibition, fitting up stalls in Welshpool market, as a small temporary restaurant, with the domestic cooking apparatus made by Mr. Fletcher, of Warrington, not, however, confining themselves to one maker exclusively, but exhibiting a fair selection. They offered at the conclusion to put up any of the apparatus free of charge for any person to whom they supplied gas. That the idea was a success may be proved by the fact that all the apparatus in use was sold at the conclusion. Their profit on the apparatus should be ample to more than pay all expenses, and they have secured a number of permanent customers for their gas. An exhibition of this kind is simple, useful, and pays everybody concerned, both sellers and buyers, and wherever it is repeated is sure to attract numbers of interested observers. It might probably pay any dealer in gas cooking apparatus to repeat the experiment in his own town, but it is certain to pay any gas company, as they not only get the dealer's profit on the apparatus, but also—what is far more important—a number of permanent customers for their gas, who are of a peculiarly valuable class, as their gas consumption would be in the day time and most in the summer, at the times when all gasworks are partially lying idle, eating their heads off with establishment expenses, and interest of capital on unemployed plant.

PORTLAND CEMENT FOR USERS.—The constantly increasing use of Portland cement is well known to all connected with matters of construction, but it is beyond question that much has to be learned with regard to its manipulation and application in order to ensure the best results. Mr. Henry Faija, C.E., has, therefore, written a little volume—*Portland Cement for Users* (London: Crosby Lockwood and Co., Stationers' Hall Court)—in which all necessary details as to weight, fineness, gauging, setting, tensile strength, sand test, and chemistry of cement are carefully given, and it is explained that the fineness should be such that the cement will all pass a sieve of 625 holes to the square inch, and leave only 15 per cent. of residue when sifted through a sieve having 2500 holes per square inch, the weight per struck bushel should be between 112 and 116 lbs., the specific gravity between 3.00 and 3.05, a pat made with the minimum quantity of water should set in not less than three hours nor take more than six hours, briquettes placed in water 16 hours after gauging should after seven days carry 400 lbs. per square inch without fracture, and after 28 days should have increased at least 25 per cent., pats left in air or water should show no cracks nor deviation in water and the colour should be a cold grey. Mr. Faija's book will be found of great practical utility by all users of cement.

GAZETTEER OF BRITISH NORTH AMERICA.—It was noticed some months since in the *Journal* that Messrs. John Lovell and Son, of Montreal, were preparing a new Gazetteer of British North America; it is now issued, and will meet the most liberal expectations likely to have been formed of it. It contains the latest and most authentic descriptions of over 7500 cities, towns, villages, and places in the provinces of Ontario, Quebec, Nova Scotia, New Brunswick, Prince Edward Island, Manitoba, British Columbia, the North-West Territories, and Newfoundland; and general information, drawn from official sources, as to the names, locality, extent, &c. of over 2300 lakes and rivers, with a table of routes showing the proximity of the railroad stations, and sea, lake, and river ports, to the cities, towns, villages, &c. in the several provinces. Referring as it does to a country in which Englishmen generally are interested, but of which they know comparatively little, much of the information given is

not only instructive and interesting but thoroughly readable; the accounts of such places as Montreal, Quebec, Manitoba, and so on, being in fact neat little historical and descriptive articles, which reflect great credit upon Mr. P. A. Crossby, the editor. It appears that the Cathedral of Notre Dame at Montreal can entirely eclipse many European edifices of the same class; the Gazetteer states that it is capable of containing from 10,000 to 12,000 persons; it is 255 ft. long and 145 ft. broad, with two towers 220 ft. in height. In the north-east tower there is a fine chime of bells, and in the north-west is a bell weighing 3000 tons. The details concerning Montreal fill five columns, and this may be taken as a fair sample of the care that has been taken to give all the information likely to be required. The volume, which can be obtained in this country of Messrs. Tribner, of Ludgate Hill, contains nearly 550 pages, and is illustrated with a well-executed map of the Dominion. The utility of the Gazetteer is beyond question, and it is likely to be extensively patronised on this side of the Atlantic as well as in Canada.

SEMI-POLITICAL SATIRES AND ENIGMAS.—In the present extremely unsatisfactory state of everything connected with the government of the country, the series of Semi-political Satires and Enigmas respecting Ireland, Afghanistan, and the Transvaal, by Mr. John Irwine Whitty, M.A., LL.D., D.C.L. (London, H. Vickers, Strand), will be very widely appreciated. Although filling but a pamphlet of 16 pages, Dr. Whitty's observations will make a deep impression. There are "four poems, with noteworthy notes and a copious glossary, to which are added Aunt Deborah's prophecies and King John, a historical anecdote without any comment." The satires are cleverly written, and will, doubtless, be productive of good results.

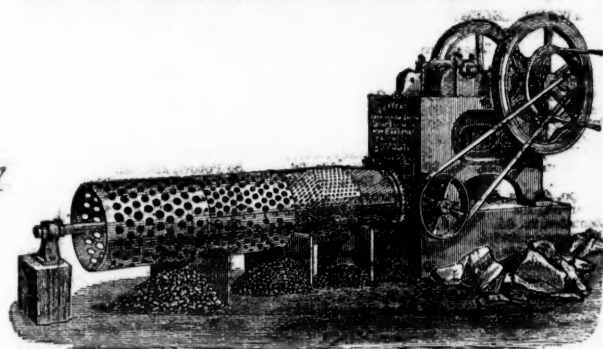
ELECTRIC LIGHTING.—When a carbonaceous conductor is employed in producing electric light on the incandescence principle, and more particularly when the conductor is obtained by the carbonisation of vegetable substance, Mr. D. G. FITZGERALD, of Brixton, gives to the conductor any required degree of hardness or solidity, and of electrical conductivity or resistance, by treating the vegetable substance or the carbon obtained therefrom with solutions rich in carbon (this element being liberated by subsequent ignition), also with salts of the refractory metals, such as platinum or iridium, and with salts, such as those of magnesium and cadmium, which, when decomposed, furnish an infusible earth or oxide, the metal, earth or oxide, being obtained in admixture with the carbon. He prefers to manufacture the carbonaceous conductor by carbonising natural unwrought vegetable fibres, such as cocoa-nut fibre or whist, passava raffia, and esparto or china grass. Such fibres and the resulting carbon may be treated as aforesaid and as described below. In order to facilitate the making of a perfect contact with the carbon conductor, he coats its terminals with any suitable metal by means of electro-deposition or otherwise, and he sometimes extends the coating of refractory metal to the whole surface of the conductor. He prefers to enclose the conductor in a glass vessel filled with acetylene, cyanogen, olefin, and gas, or vapour of mineral naphtha, and in certain cases he encloses within the vessel a small quantity of potassium or sodium or of compounds containing them with a view to the absorption of certain gases, particularly oxygen, which may be accidentally present. Sometimes he maintains the plenum of suitable gases by the passage of a continuous stream thereof through the vessel containing the incandescent carbonaceous conductor. When a metallic conductor is employed for producing the light, he embeds it in an infusible substance, such as magnesia or oxide of cadmium, in such manner as to allow of the metal being raised to the temperature at which it softens or fuses. Or he brings the two extremities of the metallic conductor into contact with two conducting masses which are separated or insulated from each other by means of an infusible earth or oxide, the metallic conductor which is to convey the current being preferably placed in a groove or recess extending from one to the other of the conducting masses across the fusible partition. This apparatus, constituting a kind of electrical crucible, is also applicable to purposes other than the production of the electric light.

HOLLOWAY'S PILLS.—For the cure of debility, bile, liver, and stomach complaints this inappreciable medicine is so well-known in every part of the world, and the cures performed by its use are so wonderful, that it now stands pre-eminent above all other remedies, more particularly for the cure of bilious and liver complaints, disorders of the stomach, dropsy, and debilitated constitution. In these diseases the beneficial effects of the pills are so permanent that the whole system is renewed, the organs of digestion strengthened, and a free respiration promoted. They expel from the secretory organs and the circulation the morbid matter which produces inflammation, pain, fever, debility, and physical decay thus annihilating, by their purifying properties, the virulence of the most painful and devastating diseases.

STONE BREAKERS.

12 BY 8

AS SUPPLIED TO THE DERBY CORPORATION.



W. H. BAXTER AND CO.,

Patentees and Sole Makers of the

Only Knapping Motion Stone Breakers and Ore Crushers.

These Machines turn out the same amount of work with less than half the power of any other, and make a better sample of Road Metal, with less waste. The movement of the Jaw can be altered to suit any kind of material, an advantage possessed by no other machine.

FOR TESTIMONIALS AND FULL PARTICULARS ADDRESS—

W. H. BAXTER AND CO., 78, ALBION STREET, LEEDS.

SEVERAL OF THESE MACHINES ARE NOW IN OPERATION.

GOLD MEDAL AWARDED, PARIS EXHIBITION 1878.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS

LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES—90, CANNON STREET, E.C.

PARIS DEPOT—12, RUE DES ARCHIVES.

BOSTON MASS., U.S.—40, KILBY STREET.

Original Correspondence.

HUNGARIAN COPPER COMPANY.

SIR,—Allow me to reply briefly to Mr. H. W. Higgins's letter on the affairs of the above company, published in last week's Journal, and I believe the shortest way to do so will be to state the facts as they exist. The Hungarian Copper Company was formed by a few gentlemen to work a mine represented to them to be of immense value, on terms arranged by those interested in the sale and themselves, all the working capital being subscribed by them and called up as required for the works, and the necessary and proper steps were taken to register the company on this basis, the public being neither asked nor wanted to take any of the shares. Under these circumstances no prospectus was issued or required, but some time after the arrangements were completed a demand sprang up for shares from persons whom I presume had heard that the company were in possession of a very valuable property, the number of shares changing hands, however, representing but a small proportion of the capital. Allow me to state in conclusion that most of your correspondent's statements are inaccurate, and I will venture to hope that, considering Mr. Evans, F.G.S., late Her Majesty's Inspector of Mines, went out to inspect the property for the intending purchasers (a copy of whose report any shareholder may see), and that we are now receiving assurances from our representative of a most cheering character, the anticipations of Mr. Higgins will prove incorrect and that we shall at no distant day receive a satisfactory return for our outlay. I may add that I hold a still larger interest than I did at the first.—London, Aug. 5. F. F. POWELL.

GREAT WHEEL POLGOOTH COMPANY LIMITED.—A

DISCLAIMER.

SIR,—I see in your report of the meeting touching legal proceedings in re Great Wheel Polgooth the name of Mr. Reynolds mentioned. Will you permit me to say that I am not the individual referred to, and that I have no connection directly or indirectly with the Great Wheel Polgooth, or any limited company? JOHN B. REYNOLDS.

COMPRESSED AIR CLOCKS.

For several years past the pneumatic system of indicating time invented by Messrs. Popp and Resch, of Vienna, has been in extensive use in Paris both for domestic and public clocks, and has given very general satisfaction. The inventors commenced experimenting on the pneumatic distribution of time in Vienna during 1876, and in the following year they established there to a limited extent a system of clocks worked from a central station, the maximum distance of transmission being 1500 yards. At this time the actuating pulsations were transmitted every two minutes, an interval objectionable enough for large public clocks, and quite prohibitory to the introduction of the system for domestic purposes. Further experiments were then conducted with the view of diminishing the intervals to one minute. Generally these experiments were conducted with a tube 1½-inch diameter and 2½ miles long. Pressure gauges were connected to it at intervals of 100 metres, and at one extremity the pipe was connected to a compressed air reservoir. Air at a pressure of about 8 lbs. to the inch was periodically admitted into the tube, in volumes equal to one-fourth the area of the tube. It was found that over the first 150 yards the air in the tube was somewhat compressed, and a loss of about one-tenth of an atmosphere took place. From this point, however, it traversed the remainder of the tube, gradually reducing in velocity and pressure until the latter at the point of exit was about one-tenth of an atmosphere. The result of these trials showed that it was possible to reduce the two-minute to one-minute pulsation, which is the basis on which the system is now being worked in Paris, where in Nov., 1877, the municipal authorities were induced to grant permission to Mr. Popp to lay down pipes in the sewers of the first, second, and ninth arrondissements of that city for the pneumatic distribution of time, and a month later he obtained authority to distribute time in private houses. The Compagnie Générale des Horloges Pneumatiques was formed shortly afterwards, and on March 15, 1880, the inauguration of the system for public service took place. Six miles of pipes had been laid down, and four clocks, some having multiple dials, mounted on lamp posts on the Boulevards received pneumatic time from the central works. These clocks have continued to work satisfactorily, and have become an established institution. Since that time the system has been further extended, and at present there are about 16 miles of main pipes laid in the sewers, and upwards of 600 houses, in which there are over 2000 pneumatic clocks, are receiving time from the central works, with which they are connected by air tubes. The public clocks have increased from four to 14 (with 33 dials among them) in the arrondissements already alluded to, while on July 19 the Paris Municipal Council granted the company an exclusive concession for 50 years for supplying the time to that city by means of pneumatic clocks both for public and private use, and negotiations are pending for applying the system at Lyons, Marseilles, Vienna, St. Petersburg, and Madrid.

The unquestionable success in Paris has encouraged those concerned to extend the system to other cities, and Mr. J. A. Berly, of New Bridge-street, whose name is already well known from his success in introducing electric illumination (the Jablochhoff system) into London, has now arranged to enable those interested to examine and test the merits of the invention. The system as at present applied is at once simple and efficient. Power is supplied from a pair of engines driving a countershaft, from which belts are led off to drive the compressors. They are vertical, double-action compressors, made by Messrs. Sautter, Lemonnier, and Co., of Paris, of their usual type, and the air passes from them by four main pipes to the branch pipes connected with the high-pressure reservoirs. The supply from each compressor can be discharged into either of the receivers at pleasure. From these receivers the air is conducted somewhat circuitously to the low-pressure reservoir, although direct communication can be established, if desired, between the high-pressure reservoirs and the pipes leading to the valve chests of the controlling clocks. The object of the low-pressure reservoir is to maintain in it the compressed air at a lower but always equal pressure (about seven-tenths of an atmosphere above the atmospheric pressure), and the periodical loss due to the discharges each minute are made good by air from the reservoir, the supply being controlled by governors. The air leaving the reservoirs flows along it until it is arrested by intermittent acting taps connected with the governors, then each time these taps are opened the air passes into pipes, and thence into the constant low-pressure reservoir. The valve chest is always in communication by an opening with the low-pressure reservoir, and during a period of about 20 seconds in each minute the feed port is uncovered, admitting air to the system of pipes; at the expiration of this period this port and exhaust port are in communication during the remaining 40 seconds of the minute, a time sufficiently long to re-establish an equilibrium in the main.

By means of the regulator the compressed air in the receivers is maintained at a constant pressure, at which pressure it is delivered to a valve actuated by a main or normal clock, by which the system of pneumatic clock itself is actuated and controlled. This normal clock is an instrument of great precision, and the equilibrium valve with which it is fitted is successively opened and shut by the action of the clock, which is self-winding. The compressed air is admitted to this valve in a continuous current; but, by means of its mechanism, it is through small branch tubes to the receiving time-keepers in pulsations. The hands of the main clock travel in the same manner as those of an ordinary clock. The intermittent current of air on reaching the receiving clocks, which are those in the streets or houses, acts upon their mechanism, transmitting the time to one, and all at the same instant. These clocks are made as simple as possible, having an ordinary minute wheel and a wheel of 60 teeth controlled to a catch fixed on a lever which receives its motion from a leather bellows. Another catch prevents the wheel returning upon itself when once it has been moved one tooth. The pressure conveyed

through the system of pipes every minute from the main clock causes the bellows of each receiving clock to expand, thus advancing the wheel one tooth, and the minute hand through a one-minute space. The main air pipes which are laid in the sewers are only about an inch in diameter, and these are tapped at intervals to meet the requirements of the customers. From the mains the air is led through branch pipes about ½ in. in diameter in the buildings and distributed to the clocks in the various apartments by means of pipes ½ in. in diameter. The clocks are supplied by the company, a small annual charge being made for their use. The air can be shut off at any time from a house by means of a cock which is placed on the service pipe at its junction with the main pipe. Leakages in the pipes have no influence upon the general working of the system, which has been brought to great perfection by the Compagnie Générale des Horloges Pneumatiques. The whole matter, in fact, appears to be so simple, its action so certain, and its cost to the public so moderate that, other things being equal, we look for its adoption in our midst at no distant period.

THE COPPER TRADE.

Messrs. HARRINGTON, HORAN, and Co. (Liverpool, July 29).—Chili copper for second part of this month are to-day advised as 1200 tons. During the past fortnight over 3000 tons Chili bars changed hands at from 58½ to 59½, according to prompt and brand; this quantity would have been further increased had sellers been willing to meet the demand. Market to-day is steady, with buyers at 58½, for good ordinary brands on the spot. In furnace material a fair business has again been done, and the sales comprise 20 tons Peruvian ore at 11s. 9d., 1923 tons Quebrada ore at 11s. 6d., 554 tons Quebrada regulus at 11s. 9d., 100 tons Cape ore at 12s., 1460 tons Betts Cove ore at 11s., 475 tons English precipitate at 12s., 500 tons Rio Tinto at 12s. 1½d., 488 tons Mazon at 11s. 9d., and 100 tons (seconds) at 11s. 6d. per unit. There has been no Swansea sale during the past fortnight. Import of Chili copper during the past fortnight, 2080 tons fine against 410 tons fine same time last year; delivery, 1268 tons fine, against 1215 tons same time last year. Import of other copper during the past fortnight, 741 tons fine; delivery, 1143 tons fine. Arrivals here during the fortnight of West Coast, S.A., produce:—Valparaiso, from Valparaiso, 20 tons ores, 425 tons bars, 77 tons ingots; Sorata, from Caldera, 129 tons regulus, 208 tons bars; Grace Gibson, from Valparaiso, 20 tons regulus, 84 tons bars. At Swansea, Emily Waters, from Guayacan and Tongoy, 642 tons bars, 42 tons ingots; Hinda, from Lota, 535 tons bars.

Stocks of copper (Chilian and Bolivian), in first and second hands, likely to be available, we estimate at—

	Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	—	262	18,430	380	—
Swansea	—	3,760	11,035	17	—
Total	—	4,022	29,465	397	—

Representing about 31,572 tons fine copper, against 30,860 tons July 15; 32,148 tons July 30, 1880; 30,451 tons July 31, 1879; 22,651 tons July 31, 1878. Stock of copper contained in other foreign ore and Spanish precipitate, 1505 tons fine, against 3470 tons July 30, 1880. Stock of Chili bars and ingots in Havre, 4522 tons fine, against 4550 tons July 30, 1880. Stock of Coro Coro barilla in Havre, 325 tons fine, against 23 tons July 30, 1880. Stock of copper other than Chili in Havre, 1070 tons fine, against 1217 tons July 30, 1880. Stock of Chili copper float and chartered for to date, 9900 tons fine, against 15,000 tons July 30, 1880. Stock of foreign copper in London, chiefly Australian, 8800 tons fine, against 6400 tons July 30, 1880.

Messrs. HENRY R. MERTON and Co. (Leadenhall-street, Aug. 1) issue the following Statistics of Copper:—

Stocks in Europe:	
Chili ores and regulus, Liverpool and Swansea (fine).....Tons	1,810
Chili bars in Liverpool	18,430
Chili bars in Swansea	10,035
Chili ingots in Liverpool and Swansea	17
Foreign copper (chiefly Australian) in London	8,800
Foreign copper	320
Chili bars and ingots and barilla in Havre	4,552
Other copper in Havre	1,240
Stocks of copper contained in other foreign ore and Spanish Precipitate (fine)	1,505
Afloat, and chartered from Chili to Europe (advised by mail):	
Ore and regulus (fine)	1,445
Bars and ingots	4,338
By cable, ores and regulus (fine)	4,250
Bars and ingots	2,350
Afloat from Australia (advised by mail):	
Fine copper	1,041
By cable: Fine copper	1,487
Total	59,095

Price of bars, 59½; Wallaroo, 67½; English tough, 64½.

Messrs. RICHARDSON and Co (Aug. 2) write:—The stocks of Chili copper produce remaining unsold at Swansea on July 1 was—Ore, nil; since arrived, 427 tons; all sold. Regulus, 3035 tons; since arrived, 1031 tons; sold, 308 tons. Copper, 10,739 tons; since arrived, 1465 tons; sold, 1169 tons. The present stocks are—Ore, 631; New Quebrada, 482; Betts Cove, 145; Union, 727; Italian, 120; Spanish, 120; British, 242—3785 tons. Chili regulus, 3760 tons; Chili copper, 11,025 tons; Spanish precipitate, 123 tons, representing about 12,800 tons fine copper as the total unsold at Swansea. The Customs returns for the first six months of this year show a considerable falling off in imports, being over 11,000 tons decrease as compared with 1880, while exports are fairly maintained. Home consumption, however, so far as can be accurately gathered, are over 6000 tons less than last year; this might occur by manufacturers keeping smaller stocks than usual. The Chili charters for the past month are advised as 550 tons bars and ingots, and 550 tons pure in ores and regulus for England for the first half, and 1200 tons fine for second half, 1000 tons for England and 200 for France. Arrivals of "Lake Copper" are likely to be small this year, as their sales are largely for their own home consumption. A large business has been done in bars, and at improving figures upon our last advice. In furnace material the following private sales have taken place here: 733 tons Bolivian ore and regulus at 11s. 9d., 2477 tons New Quebrada ore and regulus at 11s. 6d. and 11s. 9d., 1460 tons Newfoundland ore at 11s., and 50 tons Cape ore at 12s. per unit.

THE TIN TRADE.

Messrs. EBELING and HAVELAAR (Rotterdam, July 30) state:—We have to report a quiet market for tin throughout this month, a natural consequence of the holiday season. Still we have the satisfaction to point to an active consumptive demand, which have enabled holders to effect sales at fully previous prices. The Dutch Trading Company's sale in 1881 took place on July 27, when 23,653 slabs Banca were sold from 54½ to 54¾ fl., average 54½ fl. Next sale will take place towards the end of September. There has been very little variation in the price of Banca. The enquiry has been general on the part of consumers. There are now buyers at the average price of the sale, holders however asking 54½ fl. Billiton has been very firmly held, and holders have been loath to part with their stocks. At one time there were sellers at 53½ fl., at which price everything offering was eagerly picked up by the trade. There are no sellers now below 54½ fl. On Tuesday, Aug. 23, a public sale, comprising 13,000 peculs, will take place at Batavia. The position of Banca tin in Holland, according to the Official Returns of the Dutch Trading Company, was—

	1881.	1880.	1879.
Import in July	4,031	36,508	4,832
Total seven months	85,568	80,549	89,158
Deliveries in July	10,960	8,558	10,819
Total seven months	69,142	62,015	58,607
Stock second hand	40,442	47,115	22,136
Unsold Stock	50,545	47,452	22,029

Total stock 90,987, 94,567, 84,225. Afloat, 6,300, 6,880, 7,200. Statement of Billiton:—

	1881.	1880.	1879.
Import in July	4,000	4,900	6,240
Total seven months	62,750	60,133	64,038
Deliveries in July	13,662	7,195	10,848
Total seven months	69,142	62,015	58,607
Stock	45,322	55,372	59,041
Afloat	18,000	13,000	18,000
Quotation, July 30—Banca	54½ fl.	56 fl.	53½ fl.
Billiton	54½ fl.	54½ fl.	53½ fl.

These combined returns of Banca and Billiton for 1881, compared with those for 1880, exhibit a decrease of the import for July of 1043 tons; an increase of the import for the seven months of 239 tons; an increase of the deliveries for July of 277 tons; an increase of the deliveries for the seven months of 619 tons; a decrease of the stock second-hand of 504 tons; an increase of the unsold stock of 97 tons; a decrease of the total stock of 407 tons; a decline of the quotation of Banca of 2½ fl. per ton. The Government returns for the months of May are as follows:—

	1881.	1880.	1879.
To Germany	24	278	188
England	117	255	129
Belgium	82	33	50
France	98	40	20
Hamburg	—	101	164
The United States	69	115	11
Other countries	—	—	—
Total	815	823	698

Messrs. STRAUSS and Co. (London, July 31) issue the following Statistics of Tin:—

	1881.	1880.	1879.
Straits and Australian, spot.....Tons	7,425	6,886	10,799
Straits, afloat	540	325	240
Australian afloat	1,478	1,446	1,061
Banca, on warrants	1,284	1,472	1,944
Billiton, spot	1,435	1,730	1,845
Billiton, afloat	650	1,220	1,100
Australian tin in Holland	—	200	220
Total	12,917	13,494	16,839

Prices of Straits and Australian	1880	1879	1878
Deliveries during month in London	1,404	1,618	1,113
" " " " " " " "	728	281	868

Total	2,132	1,299	1,778
Shipments during the month from Straits	1881	1880	1879
Shipments from Straits to London	7,755	8,411	7,351
Shipments from Australia to London	13,693	21,985	19,829
Deliveries of tin in London	13,693	21,985	19,829
Deliveries of tin in London and Holland	21,985	21,985	19,829

Banca in Trading Company's hands and afloat, 1973 tons. Prices: Straits or Australian, spot, 90½ fl.; afloat, 91½ fl. English common ingots, 95½; refined, 97½. Banca, 91½; Billiton, 90½ fl. Stocks of all kinds of tin in American ports (including quantity afloat), June 30, 1881, 3195 tons; July 31, 1881, 2925 tons; July 31, 1880, 6470 tons.

Messrs. VIVIAN, YOUNGER, and BOUD (Aug. 4) write:—America has bought freely of late in the Straits, and should the continue to buy steadily, the position would become very strong, and higher prices be reasonably expected. It must not, however, be forgotten that the expectations last autumn of a continuous American demand through the winter were doomed to disappointment, and the European market had to stand the brunt of the fuller Straits and Australian supplies during that period. A decline from 94s. to 85s. 6d. was the consequence. The market closes firm at 91s. 6d. and tending upwards. English continues in good general demand, which is a favourable feature, and a strong contrast to last year.

THE PURCHASE-HIRE SYSTEM—CURIOUS CASE.

A curious case connected with purchase on the hire system was heard before Mr. Justice Cave at the Monmouthshire Assizes on Saturday. The plaintiff, Charles D. Phillips, of Newport, agreed to supply Ellis Hughes, of Glaslyn Mill, near Port Madoe, with a portable engine on purchase-hire. Hughes was to pay 94l. for the engine, and 7l. 6s. for pulleys, couplings, &c., together with a premium of 10l. to be paid down, and he was to pay instalments of 10l. every four months until the whole 101l. 6s. was paid. If Hughes failed to keep up his payments the agreement gave plaintiff the power to repossess himself of the engine. The engine was duly forwarded by the plaintiff from Newport to Port Madoe by the Cambrian Railway, who became defendants under curious circumstances. Hughes did want to use the steam-engine at once, and left the pulleys, shaft, and couplings at the station until he paid the carriage. Hughes paid the premium of 10l., but when the first instalment became due in October he failed to pay. The fact was he was insolvent and could not pay his rent, and on Nov. 15 the landlord, Mr. W. Roderick Jones, put in a distress for a year's rent, and seized this particular engine. On Nov. 19 plaintiff sent Mr. James, his agent, to take back the engine from Port Madoe to Newport. Mr. James got the engine upon its wheels, and obtained a team of horses to take it to the railway station. The station master said there were the pulleys, shaft, and couplings at the station, on which carriage was owing, and Mr. James said he would take them, and pay the carriage. A lawyer representing Hughes's landlord came and asked the station master to detain the engine, and gave James into custody for resisting the distress. The learned counsel submitted that as the station master had received a consignment note from the plaintiff's agent he had no right to dispute the plaintiff's title to the engine, and to allow the title of anybody else to be set up.

It is difficult to comprehend from the report of the case where the engine now is, but presumably Hughes's landlord has possession, and according to the judge's ruling will have to hand it over to the railway company. Mr. Jelf, Q.C., who with Mr. Venables represented the company, remarked that as against Hughes Phillips had no doubt a right to the goods, and the verdict seems in effect to leave the railway company to obtain them for him. It is obvious that Phillips obtained a verdict by a fluke—through the distraint having been made after sunset—so that he may consider himself especially lucky. At the close of the evidence for the plaintiff, who was represented by Mr. Matthews, Q.C., and Mr. Lawrence, there was some conversation, and it was agreed that the value of the engine was 80l.; pulleys, shaft, and couplings, 7l. 6s.; the value of the wheels on which the engine was sent to Port Madoe was 5l. Before the case proceeded further the learned Judge said he thought 5l. ought to be paid into Court for the wheels, which was done, and also 7l. 6s. for the pulleys, &c. The evidence which settled the case was that of Owen-Price, the County Court bailiff, who said he went to the factory at 5-30 P.M. on Nov. 15, and made an inventory of the goods distrained. He had the key of the premises given him that night, and went to see on each subsequent day if the place was safe. On the 19th he found the place had been broken open by the agent James.

After hearing this evidence Mr. Justice Cave ruled that no legal distress was proved, and that looking up the premises did not make legal a distress which was originally made after sunset on Nov. 15. The law, he said, gave a landlord power to seize for the payment of his rent, not only the goods of the tenant, but the goods of other people which might happen to be on the premises. He might avail himself of the goods of other people, but he must take care to keep within the strict letter of the law. A tenant cannot give the landlord a right against a third party's goods which the law did not give him. A distress must be made between sunrise and sunset. In this particular case it was clearly made after sunset. Consequently, so far as a third person was concerned, whatever the landlord's rights against Hughes might be, Hughes could not consent to part with goods that did not belong to him. There was no seizure, according to law, of Mr. Phillips's goods. The verdict of the jury must be for the plaintiff for 80l. On the application of Mr. Jelf execution was stayed, on condition that the money was paid into Court in a fortnight, in order to give him an opportunity to raise the question as to the distress if it were thought advisable to do so.

THE COPPER DISTRICT OF LAKE SUPERIOR.

Mr. Swineford, in his Annual Review of the Iron Mining and other Industries of the Upper Peninsula for the year ending December, 1880, gives the following interesting particulars:—The copper district of Lake Superior embraces the counties of Houghton, Keweenaw, Ontonagon, and Isle Royale. The following table shows a list of the mines wrought in 1880, together with the product (refined copper) of each, and the aggregate average value:—

Name of mine.	Tons.	lbs.	Name of mine.	Tons.	lbs.
*Adventure	1	951	*Mass.	253	1159
*Allouez	659	471	*Minesota	16	33
*Atlantic	1,170	1195	*Minong	13	1407
*Aztec	2	1757	*Nonseuch	37	1581
*Calumet and Hecla	15,337	1239	*Northwestern	0	916
*Central	1,013	78	*Ogima	2	1835
*Chiff	39	962	*Oscoda	1,631	1537
*Copper Falls	5	464	*Pewabic	435	873
*Delaware	116	1814	*Phenix	213	1
*Evergreen Bluff	5	651	*Quincy	1,813	233
*Flint Steel	14	80	*Shelden and Columbian	23	931
*Franklin	1,163	468	*St. Clair	6	1195
*Grand Portage	38	1860	Sundry mines and tributaries	3	163
*Hancock	35	285			
*Huron	38	1469	Total	24,863	367
Isle Royale	—	—			

*Ontonagon Co. †Keweenaw Co. ‡Houghton Co. §Isle Royale. The following table shows the product (refined copper) of the Lake Superior copper mines for each year since 1854, together with the average value:—

Year.	Tons.	lbs.	Value.	Year.	Tons.	lbs.	Value.
1854 and previous	6,992	1727	\$ 3,146,400	1880	10,467	124	\$ 4,940,424
1855	2,904	1334	1,586,160	1881	13,312	1300	6,230,016
1856	4,108	1392	2,216,320	1882	12,311	849	5,096,752
1857	4,765	830	2,382,580	1883	12,873	349	5,723,439
1858	4,579	1916	2,129,255	1884	12,276	1523	7,979,470
1859	4,663	1395	2,239,581	1885	15,045	1505	8,126,100
1860	6,034	375	2,654,960	1886	17,168	1389	8,009,256
1861	7,519	837	3,487,995	1887	18,019	1497	8,189,526
1862	6,793	328	3,634,255	1888	19,135	997	7,938,430
1863	6,492	1344	4,415,600	1889	19,513	671	7,327,333
1864	6,245	1965	5,870,300	1890	20,845	1268	6,920,540
1865	7,179	583	5,635,515	1891	21,425	1529	7,327,357
1866	6,875	607	4,628,375	1892	24,869	367	9,917,613
1867	6,763	1637	4,442,841	Total	301,053	1662	\$142,616,137

The last two tables have been compiled from figures kindly furnished by Mr. Wright, commissioner of mineral statistics. Flint and Hecla came into existence as a producing mine

since which time it has paid to the shareholders dividends amounting to \$19,350,000, though retaining a surplus of several millions in its treasury. At the same time, a vast amount of money has been expended in permanent improvements, stamp-mills, machinery, &c., the total earnings of the mine in a period of 15 years being approximated at not far from \$60,000,000. All this has been accomplished on an original assessment of only \$100,000. No other mine of any kind, of which the writer has any knowledge, has ever returned such large *pro rata* dividends to its shareholders. The celebrated Consolidated Virginia has paid dividends to the amount of a little less than \$80 per share on a capital stock of \$54,000,000; the Calumet and Hecla has paid \$193.50 per share on a capital stock of \$2,500,000—the *par value* of the Consolidated Virginia shares being \$100, and of the Calumet and Hecla \$25. We have no data at hand from which to compile a table showing the excess of dividends over assessments; but in 1875 it amounted to very nearly \$20,000,000, including in the comparison the assessments called on the shares of non-dividend paying mines, and it is fair to assume that the gain has since kept pace with the increase in the product of refined copper. Altogether, the copper mining industry of the upper peninsula is in a most flourishing condition, as might readily be inferred from the statement of gross earnings in 1880.

FIELD GEOLOGY IN THE LAKE DISTRICT.

The Geologists' Association have recently made an interesting excursion in the Lake district, under the direction of Messrs. W. H. Hudleston (president), C. E. de Rance, and W. K. Dover and Prof. Morris. The Museum of Local Natural History was visited to inspect the rock specimens collected mainly by the late Rev. J. Clifton Ward. In addition to these, Mr. Christopherson lent a magnificent specimen of pure Borrowdale plumbago. After viewing the model, Mr. Hudleston delivered a brief address. He congratulated the members upon their meeting together in such an interesting district, and referred to James Clifton Ward, whose marvellous works they could see around them. He was the great illustrator of the geology of this region. When they saw that great map of his, all those rock collections, those drawings and sections, they admit he had raised for himself a monument in the place, which the speaker hoped would remain for many years. Clifton Ward was anxious to make known his own knowledge of the district for the benefit of all who cared to avail themselves of it. As present day workers among fossiliferous remains, the speaker mentioned Mr. Christopherson and Mr. Kinsey Dover, who, he hoped, would continue their researches. Speaking for the members of the Geologists' Association, he said they were exceedingly obliged to the members of the Literary and Scientific Society for their reception, and especially to Mr. Kinsey Dover, who had consented to act as one of their directors. The first visit of inspection was to the quarry in Castlehead. This hill is entirely composed of an eruptive rock, which burst through the Skiddaw slate, most probably in early Silurian times, and contributed to the enormous outflow of lava and ashes occupying the base of the great group of rocks, formerly known as the green slates and porphyries, but more recently as the volcanic series of Borrowdale. The composition of the well known bedded lavas of Falcon Crag is sufficiently near that of the eruptive rock of Castlehead to render the supposition a very probable one.

At the summit of Falcon Crag Mr. Jenkinson pointed out the topography. The view is very extensive, and enables the spectator to contrast the scenery of the two sides of Derwentwater, the smooth and rounded outlines on the west being due to the form assumed by the Skiddaw slates. The volcanic series on the south and east refuse to take so smooth a polish. A good instance of this may be seen on the summit of Falcon Crag itself, where ice pressure during the glacial period has distinctly rounded off (*mountonnée*) the south side, but the rugged nature of the rock (a coarse ash on the summit) is beginning to show itself once more under the influence of the ordinary agencies of denudation. The next day the party proceeded via Threlkeld to St. John's quartz felsite quarry, where a faulted junction with the Skiddaw slates is shown, and the next move was for the western shoulder of Saddleback, past High Row, and up Glenderaterra. The Skiddaw slates of this region dip for the most part at moderate angles towards the north-west. They are black and glossy, but with very few traces of fossils. When nearly through Glenderaterra the metamorphic belt, containing crystals of chialotile, was reached. That this belt is really metamorphosed Skiddaw slate, and not some underlying formation, has been proved indisputably of late by the discovery in the chialotile slate on Skiddaw top of a well preserved trilobite, now in the Keswick Museum, supplemented by the discovery of a graptolite in a similar matrix.

At Myrtle Grove the members examined Mr. Dover's collection of Skiddaw slate fossils, which are the characteristic form from these beds, and Professor Morris pointed out that many different opinions had been advanced as to the systematic position of the graptolites, but the most favoured view considered them to be allied to the living sertularian zoophytes or "sea fire." Simply expressed the typical form consists of a row of horny cups united at their bases by a common tube into which they open, and generally supported by a fibrous rod which projects from one or both ends of the polypary, in which they differ from their modern allies. The portions preserved constitute the skeletons only of the composite colonies or polypary of the ancient graptolites, but there can be little doubt they were composed of flexible horny material, similar to the outer chitinous investment of the colonies of the modern sertularians. He explained that some genera are peculiar to the Skiddaw slate, as *tetraraparus*, *phyllograpsus*, and three others, but in the Quebec rocks of Canada, which are considered to be of the same geological age, or lower silurian, about eight genera occur which are common to both series. The Skiddaw slates were again examined at Lodore. Upon reaching Buttermere it was explained that here syenite supplies the place of the volcanic series. It is a handsome red rock, and will probably be worked some day. Scale Force occupies a cleft in the syenite close to a faulted lode charged with red oxide of iron. There are no signs of gradual change, the contrast is complete, and the syenite has all the appearance of an intrusive rock. On Friday the party visited Grasmere, where Mr. De Rance, of the Geological Survey, undertook the direction, and showed them the geology of the Ambleside district. This concluded the practical work of the excursion.

THE RIO GRANDE DO SUL (BRAZIL) GOLD MINING COMPANY.—We are informed that the ten boxes of gold ore forwarded from these mines when Mr. Henry Clemes was recently in the Brazils have been sold by Messrs. H. Bath and Son, at Swansea, with the following result:—1. Assay per ton for gold, 63 ozs.—2. Assay per ton for silver, 22 ozs.—3. Weight, net, 18 cwt.—4. Price per ton, 245*l.* 14*s.*—5. Price per 18 cwt., net, 216*l.* 4*s.* 4*d.* The above result is extraordinary, and we believe almost unprecedented.

WHAEL UNY.—At the meeting on Thursday the accounts showed a loss on the 16 weeks' working of 2588*l.* 8*s.* 7*d.*, and a debit balance of 3415*l.* 2*s.* 4*d.* A call of 10*s.* per share was made.

NORTH CARDIGANSHIRE.—Mr. George Henwood has been down for some days making a special report on the North Cardiganshire mines. Mr. Henwood has made a thorough examination of this extensive property above and below ground. His report will detail the progress made, confirm the recent discoveries, and state the probabilities of the future of these important mines. The Secretary, Mr. Jonathan Pell, forwards his report, which, after referring to the points of operation, says: "Although the mines have been so recently recommenced as five months since, trials for proofs have been made, in every instance with most satisfactory results, as there are three sets of tributaries at work at 12*s.* in the 1*l.*, they paying all costs. These men, I found, are making good wages. There are two sets of men on owners' account, who are daily raising splendid rocks of lead ore. I went down in a winze about 8 or 9 fms. below an adit which had been sunk for proof, and found a magnificent lode of lead, from which the men were breaking lumps of nearly solid lead of 100 to 150 lbs. weight each. There are several tons already at surface, several more broken underground ready for raising. These will be daily increased to an unknown extent should the lode hold as at present. No doubt can exist of its doing so. Seldom, indeed, is it that such beneficial results have been attained. By sinking this shaft a large space of ore ground will be laid open for stopping, and when sunk to the level below will be returned at a minimum cost. Whilst this necessary work is being done the ore raised, and to be raised, will be ready, so that in six months you may go into the market

with a fine ticketing parcel of lead ore, to be followed by increasing lots, which will satisfy the most fastidious and anxious shareholders.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. CLXXVII.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal.)

[The Author reserves the right of reproduction.]

In some special cases where the section of the roadway is large double or folding doors are used in place of one. The practice cannot be recommended, and it is always advisable by suitable arrangements of air crossings to avoid doors in roadways of large section. Folding doors cannot be employed without great loss from leakage, though they have been introduced in some cases as facilitating the traffic through them, since they can be readily pushed open by the passage of the corves themselves. With the same aim self-acting doors have been constructed, or rather doors which are opened and closed by the passage of the corf. The mechanism usually consists of a pair of levers on each side of the door, which are connected by rods to the door. The corf on approaching the door catches against one of the levers, and pushes open the door, and when it has passed through the door catches against one of the levers on the opposite side of the door, and closes it. The arrangement has only two advantages, first that the door is not injured by the corf constantly striking against it, and secondly that there is no liability of its being left open, as the corf cannot be pushed any distance away from the door without closing the latter. The arrangement, however, does not appear to be very practical, and its use has not spread. Sliding weights have been adopted in some mines for closing the doors. At the Henrietta Colliery the doors are attached to a vertical axis, furnished with iron pins. A small pulley is fixed horizontally at the upper end of the axis, to which one end of a small chain is attached, which passes over a vertical pulley fixed to the roof, close to the side. To the opposite end a weight is attached. The opening of the door coils the chain round the horizontal pulley, and raises the weight. When the door is left free the descent of the weight closes the door. The same arrangement is used at the same colliery for double doors. Both doors are attached to a single vertical axis, placed in the middle of the level, the doors opening in opposite directions. Two weights, however, are used, the ropes by which they are suspended passing over vertical pulleys fixed on both sides of the level. This arrangement is stated to have given satisfaction.

The following arrangement of swing doors has been proposed by Mr. Buddle, in order to provide against the contingency of the main doors being blown away by an explosion. The door is suspended from an axis fixed horizontally in the roof. The door itself is held up in a recess cut in the roof, either by means of a prop or other support liable to be knocked down by the force of the explosion, or by a bolt which can be drawn by the miners passing beneath it.

At the St. Etienne Colliery the same aim is sought by a somewhat different arrangement. Here two doors are suspended in a somewhat inclined position from two horizontal axes. The force of the explosion is said to close the door, which is inclined downwards towards that part of the level in which the explosion occurs. It seems, however, very doubtful whether the doors would withstand the force of the explosion.

Where the mine has but one outlet to the surface, and in single levels and drifts, some arrangements must be made for dividing the intake from the return current; or, more strictly speaking, for forming two currents. In the case of shafts, pipes or tubes should only be used temporarily whilst sinking. These are generally formed of wood, and made rectangular in section. The boards of which they are formed may be provided with groove and tongue, or laths are nailed outside over the joints. In the latter case the additional precaution may be taken to lay strips of tarred linen over the joints before nailing on the laths. In small metalliferous mines, where the shafts are rectangular in section, the division is generally formed by placing cross stemples somewhat closer together and in the same vertical plane, to which the boards or planks forming the partition are nailed. The joints in this case are covered with laths, or the boards may be nailed on in two thicknesses, so as to break joint with each other. The intake current should be made to descend the partition set apart for travelling, or for the pumps.

Where the mine is reached only by a single adit the partition for the ventilation may be placed horizontally at short heights above the floor, or nearer the roof in the case of high levels, and vertically near one side in wide levels. The partition is formed as in shafts, by nailing boards to stemples fixed at a uniform height across the level, or to vertical props. When the partition is laid horizontally near the floor the upper side of the boards are often covered by a layer of attle. For vertical partitions brattice cloth allows of being most rapidly fixed, but can only be looked upon as forming a temporary partition, and its use is, therefore, confined chiefly to roadways in mines which are driven singly, or if in pairs to the most advanced portion beyond the slit last driven. In some of the Westphalian collieries bricks laid on edge are used to form the partition in wide roadways having a double line of rails.

On the Continent sheet metal appears to have been extensively tried as material for the construction of air piping, generally of circular section. Sheet copper and galvanised sheet iron were found to be too expensive, and sheet lead too weak. Sheet zinc seems to have given satisfaction, and in the Hartz mines it is said that the air current from a Hartz ventilator could be forced successfully to a distance of 4000 meters through zinc tubing, whilst previously with wood and sheet iron air piping the current could not be forced beyond a distance of 1200 meters. The zinc tubing is formed with conical ends, so as to admit of the end of one being readily inserted into the adjoining end of the next. For a 6-in. piping the thickness of the sheet zinc is 1-16th inch. At the Dahlbuche Colliery a short zinc tube 20 in. diameter put up to replace wood air piping of 9 ft. square section, increased the ventilation from 1440 cubic feet per minute to 5770 cubic feet per minute. The colliery is ventilated by a Fabry's ventilator. When the sheet zinc tubing was disconnected from the ventilator, and placed in communication with the chimney for the boilers, the ventilation was still two to three times as great as before the gas tubing was put up. This advantage is evidently due to the diminished friction and the circular section of the airway.

PIT FIRES.

Underground fires may occur in almost every kind of mine, and consequently examples might be cited from every well known mining district. In metalliferous mines the origin of fires in many cases is traceable to the ignition of timbering at the mouth of the shaft or adit level, the flames being drawn into the mine by the ventilating current; whilst at other times the timbering may have been set on fire during blasting operations or by the miners' lights. This last has been the cause of many fires in collieries; so that as a precautionary measure it is advisable not to hang the lamps from the timbering, or place the lights near the timbering. Of course the above refers to open lights. Many fires have arisen from the heating of coal seams in the vicinity of the ventilating furnace, and from the furnaces of steam boilers placed underground. Underground furnaces should, therefore, be built in such a manner that the brickwork of the furnace itself is not in direct contact with the strata, an air space being left all round the furnace, so that a current of air can be passed between the brickwork of the furnace and the sides of the ground. Perhaps the most fruitful source of underground fires is the spontaneous combustion of coal, especially when it contains finely divided pyrites. This is due to the property possessed more or less by all coals of absorbing oxygen. The absorption increases with the increase of surface exposed, and consequently is greatest in the case of coal dust. The oxygen absorbed unites with the metal and sulphur in the pyrites to form first ferrous sulphate and

afterwards ferric sulphate. This latter also acts as an oxidising agent, becoming reduced to ferrous sulphate. The action is dependent in a very great measure on the presence of moisture. Pyrites ores are themselves liable to spontaneous combustion when in a state of division. The texture and composition of the coal, too, are said to exercise considerable influence on its liability to spontaneous combustion. In the case of metalliferous ores the danger is greater where the ore occurs in large compact masses, undivided by gangues, whilst in the case of coal seams the danger is greatest where a large amount of coal dust is produced, and a large amount of slack, and crushed and broken pillars are left in the goaf. In Upper Silesia the experience obtained showed that there was more danger from goaf fires when the roof consisted of moist clay slate and the like, which soon broke down, and then under pressure formed a tight roof over the debris in the goaf; than in the case of sandstone and similar hard rocks, which held long before breaking, and after breaking left considerable space in the interstices, through which the heated air from the goaf debris could ascend. The chief precautions against spontaneous combustion are—1., and most effectual, "the complete removal of the material won from the mine." This includes the raising of all the slack and small coal, which in many cases is out of the question from a money point of view. The adoption of the longwall system of working avoids the evil of leaving crushed and broken pillars in the goaf; and the roof settles down more quickly and readily filling up more tightly the space from which the coal has been won; which practically fulfils the No. 2 precaution of filling up the empty spaces with other material. This precaution, although perhaps the most effectual, is not applicable to more than a minority of cases.—3. Where a mine is arranged on the panel system, with a suitable thickness of safety pillar, the method is very usually adopted of closing up all the entrances to a worked-out district with air-tight stoppings. To make this latter precaution effectual, the safety pillars must have such a thickness that a weighting and falling in of the roof does not form rents reaching to other portions of the mine, which are traversed by the ventilating current.

THE LATE ACCIDENT AT NEW CATHEDRAL MINE.—The solemn inquest on five of the bodies of the men drowned by the inflow of water in January last was resumed on Tuesday before the County Coroner. Mr. Frecheville, the Government Inspector of Mines, was present, who said he had been underground in the mine. In reply to the foreman, Captain Davey, the manager, said there was no plan of the old workings. The Inspector said he had applied to the Lords and to the Keeper of Mining Records, and he was assured that there was no plan of the old workings in existence. At the time the old mine was worked they were not obliged to keep plans, and probably never had any. The evidence of James Matthews, a miner, at work in the end at the time of the accident, having been heard, and the Inspector stating that as far as he could see every care had been taken, the jury returned a verdict of "Accidentally drowned by a sudden influx of water from the old workings." The foreman said they all agreed that no blame was attributed to the agents of the mine.

GOLD AND SILVER.—Messrs. PIXLEY and ABELL (Aug. 4), write: The sovereigns, per Chimbora, from Australia, 150,000*l.* in value, have been sent into the Bank, but all other descriptions of gold have been taken for export to the Continent, together with 558,000*l.* withdrawn from the Bank. The arrivals comprise 171,720*l.* from Australia, and 1,660*l.* from Brazil. The 4000*l.* silver per Moselle, from the West Indies, was sold at 51*½*d. per ounce, but the price has not been maintained, the demand for the Continent and for India having somewhat declined. The arrivals since our last are 32,170*l.* per Rio de Janeiro, 22,440*l.* from America and 12,000*l.* from the Pacific: these amounts have been sold at 51*½*d. per ounce standard. The Khedive has taken 35,000*l.* in India.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Aug. 3—	Tankerville	30	£ 8 13 0	Nevill, Druce, & Co.
—	ditto	30	8 12 0	Panther Lead Co.
—	ditto	15	7 12 6	Sheldon, Bush, and Co.
—	Pandora	30	8 15 6	ditto
4—	East Roman Gravel	40	9 2 6	Walker, Parker, & Co.
—	Roman Gravel	50	9 1 6	Rumcorm Smelting Co.
—	ditto	50	9 1 6	Sheldon, Bush, & Co.

Date.	Mines.	Tons.	Price per ton.	Purchasers.
Aug. 3—	Pandora	30	£ 1 5 0	Dillwyn and Co.
—	East Roman Gravel	20	2 17 6	Crown Zinc Co.

Date.	Mine.	Tons.	c. q. lb.	Price p. ton.	Amount.	Purchaser.
Aug. 3—	Wheal Coates	8	9	1 6	£56 17 6	£481 9 1—

COPPER ORES.

Sampled July 20, and sold at Swansea, Aug. 2.

Mines.	Tons.	Produce.	Price.	Mines.	Tons.	Produce.	Price.
Betta Cove	110	5%	£3 4 6	Spanish Ore	39	40	£23 14
ditto	110	5%	3 4 6	ditto	28	26	14 10
ditto	110	6	3 4 0	ditto	80	11%	14 10
ditto	110	6	3 4 0	ditto	80	11%	14 10
Union Ore	94	10%	5 14 0	Mostardeira	75	8%	4 10
ditto	94	10%	5 16 6	ditto	74	8%	4 10
ditto	83	6%	3 14 6	ditto	8	19%	10 14
Berehaven	117	8%	4 15 0	Burnt Ore	99	2%	0 10
ditto	73	7%	4 6 0	Copper Resid.	7	13%	7 4
ditto	72	7%	4 3 0	Sobral Ore	5	13%	7 4

TOTAL PRODUCE.					
Betta Cove	446	£1420 2 0	Mostardeira.....	157	£ 753 15
Union	276	1411 3 0	Burnt Ore	99	64 7
Berehaven	282	1188 9 0	Copper Residue ...	7	50 1
Spanish Ore	234	2316 18 0	Sobral Ore	5	38 14

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Name.	Tons.	Amount.
P. Grenfell and Sons	395	£ 1,369 8 6
Vivian and Sons	466	2,970 5 0
Williams, Foster, and Co.	294	1,542 4 0
Mason and Elkington	212	829 15 6
Charles Lambert and Co.	119	412 7 0
Total	1486	£ 7,224 0 0

TOTALS AND AVERAGES.

Whole sale	21 cwt.	Produce.	Price.	Per unit.	Standard
1486	8%	£4 17 2	11 <i>s.</i> 0 <i>d.</i>	£20 14 7	

COPPER ORES.

Sampled July 20, and sold at Tabb's Hotel, Redruth, Aug. 4.

Mines.	Tons.	Price.	Mines.	Tons.	Price.
Mellanear	76	£3 0 0	West Tolgus	64	£ 3 10
ditto	71	3 1 6	New Cook's Kitchen	60	2 10
ditto	70	3 13 6	ditto	37	2 10
ditto	64	2 0 6	West Seton	20	2 10
ditto	62	3 6 0	Grt. Crinnis & Carlyon	45	4 14
ditto	50	1 9 6	Botallack	40	4 14
ditto	49	3 5 0	ditto	1	28 10
West Tolgus	66	4 2 0	Wheal Comfort	23	2 10

West Tolgus	66	4	2	0	Wheal Comfort	23	
TOTAL PRODUCE.							
Meallanear	516	£1592	3	0	Great Crinnis, &c.	45	£ 211 10
West Tolgus	130	651	8	0	Botallack	41	221 10
New Cook's Kit.	92	418	18	0	Wheal Comfort	23	64 6

Average standard	£87 14 0	Average produce	£3 15 6
Average price per ton	904	Quantity of fine copper, 67 tons 4 cwt.	
Quantity of ore	904	Amount of money	£3407 3 6

LAST SALE.—Average standard... £39 2 0 | Average produce... £39 2 0 | Standard of corresponding sale last month, £39 9 0 | Produce, 6%

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Name.	Tons.	Amount.
Vivian and Sons	187	£ 699 10 6
Grenfell and Sons	153	763 18 6
Nevill, Druce, and Co.	121	533 12 0
Williams, Foster, and Co.	213	841 8 0
Mason and Elkington	213	228 0 0
Charles Lambert and Co.	149	340 14 6
Total	904	£3407 3 6

NO SALE on Thursday next, Aug. 11.

Copper ores for sale on Thursday week, at the Royal Hotel, Truro.—Mines and parcels.—Devon Great Consols 809—South Canadon 470—Wheal Crebor 470—South Devon United 250—Marke Valley 175—Bedford United 70—Phenix 175—Total, 2234 tons.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath Dr. Von GROEDER, Director of the Royal Bergakademie, Clausthal, The Harz North Germany.

Mining Correspondence.

NEW WEST GOGGIN.—A. Francis, Aug. 3: We are now engaged from 6 in the morning until 3 p. m. in fitting the sweep-rod, and bob from our Foulter's shaft, and have completed the drawing apparatus from the drum of the drawing machine to the shaft, and are now ready to draw with large kibble by the machine. We expect to complete all our surface work this day. The drawing machine is now in position, and will be ready to draw the pipe, and without interruption. We are completing the device of a rope from the bottom of the wheel pit on to Foulter's shaft, and this will

bonals of lead, samples of which I send you by to-day's train. The ore ground improves as it goes downward and on west, but we have not yet seen it to the east of the soft ground, where it will intersect the Roman lode, and where we may confidently expect a good course of lead.

WHEAL UNY.—Henry Eddy, Wm. Prophet, Aug. 4: The lode in the engine-shaft is 8 ft. wide, all stamping work for tin. The lode in the 170 west is worth 12s. per fathom. No. 1 is in back of this level is worth 9s. per fathom. No. 2 is worth 12s. per fathom. No. 2 wins from the 160 being now communicated with the 170 we shall increase the number of men being here, and as the lode in the slopes is improving towards the north side we expect shortly to be able to report the slopes having an increased value. The 160 west is worth 14s. per fathom, and as there is 35 fms. between this end and the cross-course we are very hopeful of finding an additional run of productive tin ground here. The slope in back of this level is worth 10s. per fathom. The 160 east produces saving work for tin. The slope in back is worth 8s. per fathom. The 150 east on the north part of the lode is worth 6s. per fathom. The cross-cut driving south at the 130 east is now in moderate ground, and fair progress is being made. There are several lodes to the south of us, the first of which we expect to cut in two months more. The north part of the lode at the 130 west is worth 5s. per fathom. The slope in back of the 120 east is worth 1s. 7d. per fathom. We regret that our sales of tin have been less than those of the previous 16 weeks, but having an increase of water at the 160 and 170 and repeated lets with our pitwork we have not been able to continue the stoping of the tin ground regularly. We have now fixed a new plunger lift at the 160, whereby we shall reduce the number of strokes made by the pumping engine to four per minute; we shall, therefore, (for the future) be enabled to work the bottom of the mine with comparatively few lets, and have every confidence that our sales of tin will increase. We have sent 300s. in repairing boilers and machinery, and calculate that previous to the coming winter we shall have all our boilers and machinery in good working order. We recommend the introduction of boring machinery for driving the 170 west and also for sinking the engine-shaft. At the former point the tin ground will be opened with far greater speed, and at the latter point it is very necessary to get down as early as possible to the junction of the side lodes underlying towards us, where we have every reason to expect a very great improvement in the general character of our lode. A skip-road in the engine-shaft will very naturally facilitate the latter object.

TO THE METAL TRADE.

FOR COPPER, TIN, LEAD, &c., apply to—
MESSRS. PELL, BOYLE, AND CO.,
SWORN METAL BROKERS,
ALLHALLOWS CHAMBERS, LOMBARD STREET, LONDON.
(ESTABLISHED 1849.)

JOHN G. EAST,
NEWCASTLE-ON-TYNE.

BROKER FOR THE SALE OF PIG-LEAD, LEAD ORES,
COPPER ORE, COBALT, MANGANESE, CARBONATE OF
BARTES. ESTABLISHED 1866

HENRY NUTT AND CO.,
7, BRISTOL ROAD, BIRMINGHAM.
PURCHASERS OF
LEAD ASHES, LEAD SLAGS, SULPHATE OF LEAD, TIN
ASHES, TERNE ASHES, AND ALL REFUSE CON-
TAINING TIN AND LEAD.

HENRY WIGGIN AND CO.
(LATE EVANS AND ASKIN),
NICKEL AND COBALT REFINERS
BIRMINGHAM.

The Mining Market: Prices of Metals, Ores, &c

METAL MARKET—LONDON, AUG. 5, 1881.

IRON.	£ s. d.	U. S. d.	TIN.	£ s. d.	U. S. d.
Pig, B.M., f.o.b., Clyde...	2 6 4½	2 6 8	English, ingot, f.o.b....	97 0 0	—
Scottish, all No. 1...	2 7 5	2 8 3	bars...	98 0 0	—
Pars, Welsh, f.o.b., Wales...	5 15 0	—	refined...	99 0 0	—
in London...	5 15 0	—	Australian...	91 7 6	—
Stafford...	6 15 0	—	Banka...	91 10 0	92 0 0
in Tyne or Tees...	5 7 6	5 10 0	Straits...	91 7 6	91 10 0
Swedish, London...	9 0 0	9 10 0	COPPER.		
Rails, Welsh, at works...	5 5 0	5 7 6	Tough cake and ingot...	64 0 0	65 0 0
Sheets, Staff., in London...	8 0 0	8 5 0	Best selected...	65 0 0	66 0 0
Plates, ship, in London...	7 2 6	7 5 0	Sheets and sheathing...	72 0 0	73 0 0
Hops, Staff., in London...	7 0 0	7 5 0	Flat Bottoms...	74 0 0	75 0 0
Nail rods, Staff., in Lon.	6 0 0	6 10 0	Wallaroo...	68 0 0	—
STEEL.			Borra, or P.C.C....	65 10 0	—
English, spring...	11 0 0	11 10 0	Other brands...	60 0 0	63 0 0
cast...	10 0 0	10 40 0	Chili bars, g.o.b....	59 0 0	—
Swedish, keg...	15 0 0	—	PHOSPHOR BRONZE.		
leg. ham...	15 10 0	—	Alloys I., II., III., and IV. ...	£120 0 0	—
LEAD.			VI. and VII. ...	135 0 0	—
English, pig, common...	14 10 0	14 12 6	XI., Spl. bearing metal...	112 0 0	—
W.B. ...	15 0 0	—	BRASS.		
sheet and bar...	15 2 6	—	Wire...	6½d.	—
pipe...	15 12 6	—	Tubes...	8½d.	—
red...	16 15 0	—	Sheets...	8½d.	—
white...	21 15 0	23 15 0	Yel. met. sheath. & sheets...	6½d.-6½d.	—
patent shot...	17 5 0	—	TIN-PLATES.*		
Spanish...	14 2 6	—	Charcoal, 1st quality...	1 2 1	4 0
NICKEL.			2nd quality...	0 18 0	0 0
Metal, per cwt. ...	15 0 0	15 0 0	Coke, 1st quality...	0 18 0	0 18 6
Ore, 10 per cent. per ton...	0 0 25	0 0 25	2nd quality...	0 16 0	0 16 6
QUICKSILVER.			Black...	15 10 0	—
Flasks, 75 lbs. (nom.)...	6 10 0	—	Canada, Staff. or Gla. ...	12 0 0	—
SPELTER.			at Liverpool...	12 0 0	—
Silesian, Swansea...	15 10 0	15 15 0	Black Taggers, 450 of ...	30 0 0	—
English, Swansea...	16 10 0	—	14 x 10 ...	30 0 0	—
Sheet zinc...	19 15 0	20 0 0			

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 15s. 6d. per box more than 10 quoted above, and add 6s. for each X. Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—A fairly good tone still predominates in most branches of the metal trade, in some instances a rise upon last week's quotations has been effected, but in others prices are somewhat easier. The holiday season just now does not produce any very marked effect upon business; in fact, in the case of tin, there has at times been symptoms of a feverish excitement, while the trade generally is still buoyed up by the rosy prospects so frequently pictured of its future, which of themselves in a great measure create a fair general demand, while speculative operators will not allow the present apparently favourable opportunity to pass by without giving it its due consideration, the result of which is a somewhat animated business is transacted, especially in those cases where statistics show a reduction in the visible stock, combined with a probability of a reduced supply. Here and there business still keeps quiet, but there are undoubtedly signs of a radical improvement in nearly every branch of the trade in places only slight, but yet sufficient to warrant the expectation that a further development is in store, and as the depression during the earlier part of the year was general, so doubtless the revival will be universal, and although it is but reasonable to anticipate that a greater recovery will be made in those metals where statistics are most favourable, yet at the same time there is no cause to fear but that there will be at least a satisfactory demand for other metals, while some persons are even sanguine enough to look for a sufficiently great augmentation in the demand to absorb a great portion of the very heavy stocks now existing. But setting apart these promising opinions which are being so freely expressed, and looking at some of the actual circumstances in connection with the trade, it must be acknowledged that these encouraging ideas are not based without some substantial foundation.

According to advices just received the reports of the Russian harvest are very satisfactory. This is a good feature, because the Russian demand is an important item in our trade at all times, and, of course, more especially so when the harvests of that country are bountiful, while a brisk demand from Russia would also not unlikely bear its influence upon the demand from other parts of the Continent, so that, with regard to the Continental trade, there are fair grounds for looking forward to increased orders. Passing on from the Continent to some of our colonies abroad, there are advices repeatedly being received from Australia of an enlarged business being carried through, while sellers, in many instances, are able to obtain better prices. The limited quantities lately shipped to India strengthen the idea that the demand from that country must shortly be better, and although no very bright prospect is entertained of the American trade, yet it is hoped that the deficiency in the demand from that country will be made up by increased orders from other sources and for home consumption.

COPPER.—This market has remained steady, prices continuing strong, without, however, having made any marked advance, while buying orders are more plentiful, perhaps on account of statistics showing a still further improvement on the 1st inst., the total visible stock of all kinds of copper having been reduced to 59,995 tons, against 59,936 tons on the 1st ult., or a decrease of 59 tons. The statistics show a slight increase in the stocks of Chili produce in Liverpool, Swansea, and Havre, but a sensible decrease in that advised as affoat and chartered to Europe. The stock of foreign copper here (chiefly Australian) also shows a perceptible reduction, while the stocks of foreign ore and Spanish scrap-plates are likewise diminished, being 1505 tons against 2121 tons. These figures, on the whole, must, therefore, be reckoned satisfactory, and hence the slight tendency of prices. As a rule, there is nothing which influences the

market to a similar extent as statistics. Cheap money may encourage buying, and quietude in politics will improve the tone, while bright prospects of a good harvest stimulates speculation, whereby prices are temporarily enhanced, but there is nothing which tends so much towards the permanent establishment of higher prices as a repetition of improved statistics, for while stocks are being reduced it is a criterion the supply is being kept within the requirements of the trade. In manufactured sellers are very firm in their combination prices, and they have in some cases been enabled to obtain their quotations, a few fair shipping orders having been placed. There are, however, still some enquiries at slightly under current quotations, and it remains to be seen whether buyers will increase their limits for these orders, or sellers make concessions. At the public ticketing, held at Swansea last Tuesday, 1488 tons copper ores of an average produce of 8½ per cent. were sold, at an average of 11s. 1d. per unit.

IRON.—This market remains decidedly quiet, but prices are for the most part without material alteration, although at times somewhat lower prices have been accepted for Scotch pigs. This is not surprising, for the public stock has been greatly increased, which is to be accounted for by the relighting of seven furnaces, so that the number of furnaces now in blast in Scotland are only one short of those going previous to the recent damping of them down. It was to be hoped when the few furnaces were amped down they might have been kept down for some time, so as to give a chance for the excessive public stock to be reduced, but the iron masters evidently think that such is not the most prudent course to adopt, and have, therefore, relit their furnaces, in the hope that the demand may be increased, and ere long exceed the supply. But this appears very questionable, for notwithstanding that there seems a good chance of the demand being stimulated, yet to exceed the present rate of production, it would have to be very much enlarged. It, however, appears certain that notwithstanding the numerous complaints which exist of present prices being unremunerative, yet they must leave some return to producers, otherwise there would not be so great a desire to maintain the number of furnaces in blast. When these furnaces were first damped down it was then stated that the movement would not be of permanent duration, merely having been done for repairs; but at the same time it was to be hoped that when statistics were published showing that even with the reduced number of furnaces in blast the stock increased, that makers would have seen the necessity or still further reducing the number then going to display apparently so much undue haste in relighting them.

On Monday last, being Bank Holiday, there was no warrant market; and on Tuesday the market was somewhat quiet, and with but a limited business doing, prices receded from 46s. 9d. to 46s. 7d.; and on Wednesday and yesterday there was not any perceptible alteration, the official prices being 46s. 7d. to 46s. 8d., the closing quotation to-day being 46s. 4½d. to 46s. 6d. The foreign and coastwise shipments last week were 9285 tons, against 10,055 tons in the same week last year, or a decrease of 730 tons, and which makes the total shipments for the whole of this year 323,317 tons, against 425,994 tons for the corresponding period of 1880, and 290,044 tons for the same time in 1879. The number of furnaces in blast has been increased to 115, while the public stock now in Glasgow is estimated at 575,370 tons, against 572,002 tons last week, or an increase of 3368 tons. The imports of Middlesbrough pig iron into Grainger-mouth last week were 5015 tons, against 5870 tons for the similar week of last year, or a decrease of 855 tons for the week, and an increase of 37,883 for the whole of this year compared with last. The Cleveland market is reported very dull, business being limited, owing to the marked reluctance of buyers to pay ruling prices, while sellers do not appear altogether indisposed to make concession when limits are but a shade under present rates. The general quotation for No. 3 is 37s., with the usual difference of 1s. for foreign iron. Shipments last month were as good as those in June, being about 4000 tons, and amounting to 87,595 tons. There was a further increase last week in Messrs. Connal and Co.'s stock in Middlesbrough, which now amounts to 184,510 tons. The strike in the plate trade has been brought to a termination, and prices of manufactured goods are firmer, enquiries being more numerous. Common bars are held at 54. 12s. 6d., and angles at 54. 10s. Ship plates are quoted at 64. to 65. 2s. 6d., and puddled bars at 37. 12s. 6d. per ton.

The Cleveland iron masters' returns for the month of July are not satisfactory, since they do not show an increase in the stock of 5300 tons. A good deal of animation is reported still to exist upon the Birmingham market, activity being especially prominent at the various sheet mills. The quotations for crude and finished iron are well sustained, unmarked bars being 5s. dearer than they were a month ago, while common pigs are also 1s. 3d. to 2s. 6d. higher. Many of the second-class bar houses have their books well filled with orders, and in a few instances orders have been refused unless buyers will pay higher prices. At Sheffield activity is still said to prevail in the various branches, and there is said to be no lack of orders which are being placed for the various works. Some good orders are from time to time being placed for rails, as well as for other railway materials; and if complaints exist it is merely owing to manufacturers expressing dissatisfaction at the present prices realised. The Welsh trade is being favourably influenced by an improved American enquiry, as also from a better colonial demand. According to advices from New York of the 29th ult. there is a good request for Scotch pigs at firmer prices. An advance of 2s. is recorded in the price of Glengarnock and Coltness, while old rails are also rather dearer. No. 1 Gartsherrie is selling at £23.50, Glengarnock at £23, Coltness at £24, and Eglington at £20.50. Huddersfield offers at £24, and Cleveland pigs at £19. Scotch is selling at £27, and old rails at £26.50.

TIN.—This market has for the most part been animated, and improved prices realised. Buyers pay the advanced rates with greater freedom, while holders are rather reluctant sellers even at the present improved rates. The better tone prevailing is to be attributed to statistics showing a further reduction in the public stock, combined with advices from Holland, reporting that higher prices have been realised, while reports from America are also favourable, since they likewise show a reduction in the stock of all kinds of tin, the quantity in the various ports, including that afloat, being 2925 tons on the 31st ult., against 3195 tons on June 30. Advices from the Straits also report that the prices ruling there are considerably in advance of those here. The most striking feature in the tin market is, perhaps, the excellent deliveries for the month of July. These show that a large volume of business must have been transacted, irrespective of that done for speculative account, and should the demand for tin-plates be maintained there is nothing to expect that otherwise than a brisk business will continue to be carried through for legitimate purposes. There is a marked falling off in the production of English tin. According to statistics, the total visible stock on the 31st ult. was 12,917 tons, against 13,646 tons on June 30, or a decrease of 729 tons. The deliveries last month were 2135 tons, against 1931 tons in June, and 1298 tons in July in 1879. The shipments from Straits last month were only 100 tons, and from Australia 575 tons.

LEAD.—There is no visible change to have to record in the condition of this market, and it is not a little surprising that the demand should remain so exceptionally dull, while prices keep so very moderate.

STEEL.—This market is without noteworthy alteration; it continues to suffer, as it has done for a long time past, from a want of an appreciable American demand, nevertheless at some of the mills, especially at Sheffield and the surrounding neighbourhood, a fair amount of activity is reported, and although chiefly for rails, yet other descriptions are also receiving a better request.

TIN-PLATES.—Prices continue firm, and after the long cessation in the demand the slightly better enquiry of the last week or two is much appreciated.

SPELTER.—The market remains quiet, a few lots having been sold at a shade lower—15s. 10s. to 15s. 12s. 6d., ex ship London. The quotation is 15s. 10s. to 15s. 15s. for ordinary brands.

QUICKSILVER.—The importers of Spanish are firm at 6l. 10s., refusing offers of 6l. 7s. 6d.

The **MINING SHARE MARKET** is without material change since our last, and prices for the most part are still merely nominal. A few transactions have taken place in Wheal Agar, Dolcoath, Carnarvon, South Frances, Devon Great United, Prince of Wales, Wheal Crebor, and a few others.

TIN.—The standard for tin ores remain stationary, and shares in tin mines, though more dealt in, perhaps, than others, had a tendency towards weakness until Friday, when they improved. Blue Hills, 3 to 3½; East Blue Hills, ½ to ¾. Carn Brea, 23 to 24; at the meeting a dividend of 10s. per share (3000l.) was declared. The accounts showed a profit of 3212l., and a credit balance of 3419l. The tin sold—319 tons—realised 17,097l. The agents hope to do as well for the next account. Dolcoath, 69 to 71; Cook's Kitchen, 16½ to 17; Drakewalls, par, ½; East Pool, 36 to 38; South Condurrow, 9 to 9½.

Wheal Pevor, 14 to 15; at the meeting the accounts showed a profit of 856l. on four months' working and a balance in hand of 1542l., out of which a dividend of 6s. per share was declared. The tin sold—127 tons—realised 7046l. The agents reported that during the past quarter they had not made such satisfactory progress in sinking the shaft below the 90 as they could have wished, owing to hindrances in connection with pitwork and engine, but during the past month it was more favourable, and they had sunk at the rate of 7 ft. in four weeks. The lode in the 90 had not been so good, but was improving, worth 10s. per fathom. The tinstuff was fallen off in quality, but the agents hoped soon again to discover something good, so as to give more satisfactory results in future. West Pevor, 14½ to 15; Polrose, ¾ to 1; Wheal Agars have been in good request, and leave off 15½ to 16; Wheal Bassett, 4 to 4½; South Frances, 14 to 15; West Bassett, 14½ to 15.

Wheal Grenville, 8 to 8½; Wheal Kitty (St. Agnes), 2 to 2½; Wheal Uny, ¾ to 1; West Frances, 12 to 13. West Polbrean, 1½ to 1½; from indications in the cross-cut the agent soon expects to intersect the West Kitty lode. West Kitty, 6½ to 7; the lode in 72 east is worth 20s. per fathom, 60 east 40s. Goodevere, 1½ to 1½; Mount Carbis, 35s. to 40s.; North Penstruthal, 25s. to 30s.; New Kitty, 30s. to 35s.; North Busy, ¾ to ¾; Phoenix, 3½ to 4½; South Penstruthal, ¾ to ¾; Tincroft, 17½ to 18½; West Phoenix, 1½ to 1½; Wheal Jane,

10s. to 15s.; Wheal Jewell, ¾ to ¾; Wheal Sisters, 2 to 2½; Wheal Elizabeth, ¾ to ¾.

COPPER MINES.—Very little doing in copper mines. At the Cornish Ticketing on Thursday the standard for ore advanced 5s. The average price of the ore sold was 3l. 15s. 6d.; average produce, 77 per cent. Bedford United, 30s. to 35s.; Carnarvon Copper, 2 to 2½; Devon Great United, 8½ to 9½; Devon Great United, 2 to 1; Caradon, 2 to 1; Gunnislake (Clitters), 2½ to 3; Mellanear, 4½ to 4½; the sale of ore on Thursday realised 1592l. Gawton, 1½ to 1½; Devon Friendship, 1½ to 1½; the report from the managers this week is very satisfactory, and Capt. Daw has again inspected, and repeats in the strongest terms his favourable opinion of it. He estimates that in the ground driven through in the adit, and for 30 fms. deep, there are 18,000 tons of arsenical mudic, which he values at 27,000l. This is irrespective of the immense quantity broken at surface.

Marke Valley, 1 to 1½. A special report on Mona by Captain J. Kitto has been received, and will be published in the Journal next week. New Cook's Kitchen, 6 to 6½; New West Caradon, 8s. to 10s.; Parys Corporation, 10s. to 12s. 6d.; Morfa Du, ¾ to ¾; Mona Consols, 1 to 1½. Prince of Wales have been in fair demand, and leave off ¾ to ¾. South Caradon, 57½ to 60; South Crebor, ¾ to 1; West Caradon, 1 to 1½; West Crebor, 8s. to 10s.; Wheal Crebor, 3 to 3½; West Tolgus, 20 to 25; South Devon, 1½ to 1½.

LEAD.—Very little doing in lead mines. Vans are quoted 4½ to 9½; Great Laxey, 17 to 18. Roman Gravels, 11 to 12; the sale of ore, 100 tons, realised 907l. 10s. Tankerville Consols, 10s. to 12s. 6d.; a good report from the agents has been received this week. The 75 tons of lead ore from Tankerville realised 631l. East Roman Gravels, 17s. 6d. to 22s. 6d.; the lode in the 109 is still worth 2 tons. They have sold 40 tons of lead, for 365l., and 20 tons of blende for 57l. 10s. Pandora, 15s. to 20s.; the 45 south is worth 25 to 30 tons of lead ore per cubic fathom. A stoep in the back is worth 2 tons. The sale of ore, 30 tons of lead, realised 263l., and 30 tons of blende 37l. 10s.

North D'Eresby, 1 to 1½; Goddard's Lead, 1 to 1½; Denbighshire, 2 to 2½; Derwent, 1½ to 1½; East Craven Moor, ¾ to 1; East Van, 1 to 1½; Gorsedd and Merilyn, 2½ to 3; Herodsfoot, ¾ to ¾; Lead hills, 2 to 2½; North Herodsfoot, ¾ to ¾; Kirk Michael, 1 to 1½; West Holway, 35s. to 40s. Great Holway, 5 to 5½; the sale of lead, 25 tons, realised 257l., and 40 tons of blende 121l. Pen-y-Oreseed, 1 to 1½; Coed-y-Fedw, 1 to 1½; Crosswood, ¾ to ¾; Frongoch, ¾ to ¾; Goginan, 1 to 1½; Red Rock, 1½ to 2; New Wye Valley, 1 to 1½; Ystwith ¾ to ¾; South Darren, 1½ to 1½; Gwernymynydd, 1½ to 1½.

FOREIGN MINES.—Almada and Tiritio, ¾ to ¾; Brazilian Gold, 1 to 1½; Bratsberg, 2 to 2½, fully paid; Capt. Daw reports that the mines have greatly improved since his report in the prospectus. He says the ore ground opened is worth more than 200,000l., and when the boring and additional winding machinery is erected, the present profits will be largely increased. Birdseye Creek, 1½ to 1½; Blue Tent, 2 to 2½; Hultafall, 1½ to 1½. Michipicoten, 1½ to 1½; a telegram has been received from the manager, announcing an important discovery of copper made by the diamond drill at a depth of 220 ft. Cape Copper, 42 to 44; Coplapo, 2½ to 2½; Don Pedro, 10s. to 12s. 6d.; Emma, 2 to 2½; English Australian, ¾ to 1; Frontino and Bolivia, 3½ to 4½; Panulillo, 5 to 5½; Richmond, 17 to 17½; St. John del Rey, 210 to 220; Devala Central, 1½ to 1½; Devala Mayor, 1½ to 1½; Devala Provident, 1-16 to 3-16; Indian Phoenix, 1½ to 1½; Indian Glenrock, 1½ to 1½; Indian Trevelyan, 1 to 1½; Mysore, 1½ to 1½; Mysore Reef, ½ to ¾; Ooregum, ¾ to 1; Rhodes Reef, ¾ to 1; South Indian, 1½ to 2; Tambracherry, 1½ to 1½; Wynad Perseverance, 1½ to 1½.

The Market for Mines Shares on the Stock Exchange has exhibited some considerable fluctuations during the week, but does more favourably than last week, and in many cases important improvements in prices have been established. The tin standards are well maintained, the copper standards both at Swansea and in Cornwall have improved, good prices have been obtained where parcels of lead and blende have been sold, and the prospects of the coal and iron trades are considered to be better. The legal decisions in the cases of Great Polgoth and Silver Valley, which are fully referred to in another column, although displaying an amount of commercial immorality much to be deplored, has demonstrated that the Courts will protect capitalists whom it is attempted to impose upon, and thus shares in new enterprises will be subscribed for with a confidence of safety which for some time past has been wanting. It is anticipated that at the close of the present holiday season there will be a period of renewed and considerable activity.

Indian gold mining shares appear to be gradually regaining the confidence of the public, it being now better understood that, inasmuch as none of the companies are ready for practical work, all telegrams and reports of yield are necessarily of a merely problematical character. That there is plenty of gold in the properties of most, if not all, of the companies' properties is admittedly beyond question, but from what can be learned an almost new style of engineering will be required to work them, and probably not one of those whose names have been prominently before the public as reporters and superintendents are equal to the task. Difficulties have to be surmounted which are not met with elsewhere; but at the same time it must be understood that elsewhere far greater difficulties, though dissimilar, have been readily and successfully surmounted. The closing quotations of the principal shares of this are—Devala Central, ¾ to 1½; Devala Mayor, 1½ to 1½; Devala Provident, 1-16 to 3-16; Indian Glenrock, 1½ to 1½; Indian Phoenix, 1½ to 1½; Indian Trevelyan, 1 to 1½; Indian Consolidated, par to ½ prem.; Mysore, 1½ to 1½; Mysore Reef, ½ to ¾; Ooregum, ¾ to 1; Rhodes Reef, ¾ to 1; South Indian, 1½ to 2; Tambracherry, 1½ to 1½; Wynad Perseverance, 1½ to 1½.

The mines of the Gold Coast are attracting somewhat more attention. In another column will be found the commencement of an interesting series of articles on the district by Mr. Thos. Cornish, who has just returned from an inspection of the Akankoo (Gold Coast) Mining Company's property. From the circular issued to the shareholders it appears that Mr. Cornish brought with him, in accordance with the instructions of the board, samples from the main shaft and the various outcrops on different parts of the property, contained altogether in 32 parcels, and weighing more than two tons. These instructions to Mr. Cornish were urgent that the samples should be fairly taken from the thickness of the lode in the shaft. The assays by Messrs. Johnson, Matthey and Co. and Mr. Claudet give a very nearly similar average of about 1 oz. 1½ dwt., and the circular remarks that when it is remembered that most of the established gold mines pay large dividends from ore yielding half an ounce per ton, the directors feel justified in congratulating the shareholders on possessing a property which has just been shown by operations conducted in their interest and on a practical scale to contain ore yielding so high an average of gold.

The Southern States Coal, Iron, and Land Company, registered in April, 1875, with a capital of 250,000l., of which 145,000l. is issued, are inviting subscriptions for 120,000l. Six per Cent. First Mortgage Debenture Bonds. The prospectus states that the company's objects were, among other things, to acquire mineral and agricultural lands in Tennessee, U.S.A., and to develop such lands and erect works for the utilisation of the minerals. The company has purchased considerable iron ore coal, and well-timbered lands, and has laid out the town of South Pittsburg, the centre of the company's iron industry, and the town of Vicksburg, where the company's collieries, coke ovens, and other works are located. The company has erected two blast-furnaces, one of which is now at work, foundry, machine and railway wagon shops, saw-mills, &c. It appears that upwards of 200,000l. has been expended by the company in the purchase of land, development of minerals, and the erection of works and buildings. The sum of 120,000l. now required is to pay off the mortgage debentures falling due in November next, and to provide for the further development of the company's property and the enlargement of its operations. The security offered are the lands, the Pittsburg freehold, about 3483 acres; the Cumberland Mountain property, freehold, comprising about 47,741 acres of coal, excellent agricultural and well-timbered land, with 107 coke ovens, fire-brick works, &c.; the Teagues, 321 acres freehold, and 1136 full mineral rights iron ore property; and French Broad, 1000 acres freehold and 17,400 acres mineral rights. The mortgage debentures will be issued to the lender, free of expense, in sums of not less than 50l. each, repayable in 10 years, and bearing interest at the rate of 6 per cent. per annum, commencing from the date the money is received by the company—principal and interest payable at the company's bankers.

We announced some time ago the formation of a powerful syndicate in connection with the mineral resources of Spain, and we are informed their labours, which have been actively pursued and conducted by skilled investigation, have resulted in the selection of several properties from amongst a great number examined, which is proposed to work under one confederation under the name of the Consolidated Mining Company of Spain. The mineral resources of Spain are, it is well known, unsurpassed in extent and richness by any in the world, and for a long

period British capital has been profitably employed in developing them. From the time of the first undertaking, started by a quarter of a century since by Messrs. John Taylor and Sons, down to the present, when the successes of the Rio Tinto, Thariss, and numerous others which have enriched British speculators, are fresh in the knowledge of all interested in mining; and it is encouraging, in connection with its prospects of continued worth, to refer to the famous old Linares, which after a long period of success still occupies a respectable position amongst the Foreign Dividend Mines share list of the Journal, the shares of 34. each being now, after so many years, quoted at double the amount paid. This company has repaid its original capital more than six times over. We are informed the capital of the Consolidated Mining Company of Spain will be 2,000,000, which will be chiefly raised by private subscription; and as the gentlemen forming the board occupy high social positions, and are, moreover, acquainted with the business, it is believed the remaining part of the capital offered to the public will be rapidly subscribed for. The mines acquired by the company include, we are informed, three gold properties in the province of Guadalupe, a district which has always been known to geologists as highly auriferous. We shall watch the progress of the company, and hope it will be a successful one. We shall watch the progress of the company, and hope it will be a successful one. We shall watch the progress of the company, and hope it will be a successful one.

Mon, 10 to 11; these shares were erroneously quoted at 8 to 9 in last week's Journal, and great annoyance has thus been caused to certain large dealers in and holders of them, especially to Mr. H. Gould Sharp, of Threadneedle Street, who, holding a large number of the shares, naturally complains that the difference represents a great depreciation in the nominal value of this property, though it cannot affect its real value. One of the principal dealers in them writes: "As I know that large transactions took place at very different prices I am quite at a loss to understand how the above quotation could have got into print. The fair price would certainly be 10, to 11, and I can understand no other quotation being correct."

Devon Great Consols, 9 to 9½; the sampling this month is 809 tons of copper ore. The report in another column states that some good discovery is expected in sinking the western shaft.

Devon Great United, 1½ to 2; the report appears in another column, showing the progress being made.

Kit Hill, 17s. 6d. to 20s.; part of the machinery is promised by the foundry to be sent to the mines next week.

Drake Walls, 17s. 6d. to 20s.; the latest information received shows that the water is being rapidly drained from the shaft.

South Devon, 1½ to 1¾; the 100 and 110 are looking better, but the dressing of ore has been interfered with for the want of water.

South Frances, 14 to 15; a report appears in another column respecting the improved position of the mine, but the foundry people (the usual complaint against foundry establishments) have disappointed the company. The question of time and a fine should be imposed by mine companies on all contracts entered into.

Richmond, 17 to 17½; on Tuesday the directors declared a dividend of 10s. per share, payable on Aug. 9. The circular announcing the dividend states that the furnaces, which were shut down on May 30 for repairs, recommenced smelting on July 18. The machinery in every department was, during this period, put into thorough order and repair, and everything is now reported to be running smoothly and well. With regard to the suit with the Eureka Company, negotiations are going on with the object of settling out of Court an agreed amount in payment of damages and costs. The hearing of the suits with the Albion Mining Company commenced in the District Court at Eureka on July 5. It will be remembered that in June last both parties were restrained by injunction from working in the disputed ground, pending the decision of the Court. The suit was originally brought against the company by Rose and another, who claimed to be owners of a certain mining location called the "Uncle Sam," which overlapped a portion of the Richmond Company's ground, and which the Albion Company had purchased. The Albion Company applied to the Court to be allowed to "intervene;" this application was refused. The Court, however, allowed the Albion Company to be substituted for Rose as plaintiff. The decision was given in last week's Journal. It is explained that the "Victoria Patent" refers to some adjoining ground belonging to the Richmond Company, and for which they have the United States patent, and it is expected that this decision of the Court will put in to end all further litigation, and leave the Richmond Company in undisputed possession of the ground. The week's run was 440,000, from 770 tons of ore, the refinery has just started. The manager's report will be found in another column.

Ruby and Dunderberg, 6½ to 7; the usual telegram reports that the satisfactory working of the furnace continues. The week's run was 313,000, from 274 tons of ore, producing 43 tons of bullion. The shipments were 182 tons. The report of Mr. T. Richard, in which he refers to the future operations of the Ruby Company, is already being practically demonstrated not only in the furnace returns, but also in the development of the company's mines. The weekly report states that the various points in both the Dunderberg and Bullwhacker are looking well. The No. 1 ore body, above the east cross-cut from the 600 ft. level, is producing the best ore at present being taken from the mine. Operations in the direction of the Home Ticket lodes continue so receive the earnest attention of the management at Eureka.

The Battersberg Copper Company statutory meeting was held to-day at the offices, Austin Friars, when Mr. Murchison, who presided, made a very favourable statement with regard to the present position and future prospects of the company. His statements were confirmed by Capt. Daw, the manager, and Mr. York, one of the directors, who has recently returned from a visit of inspection to the mines. A full report of the meeting will appear in next week's Mining Journal.

Kapanga Gold Company, par to ½ prem.; the latest advices received are highly satisfactory, and the manager states that he "hopes soon to see the shares at 3½ to 4½ each." The directors and a large number of shareholders have taken up the new issue of shares (with the bonus shares), and other large holders have signified their intention of immediately doing so. Some important discoveries of gold are expected to be made this month. The general prospects are considered excellent.

Yuba River Gold Washing Company's shares have been in demand, and we learn that a large first allotment of shares have been made, and a second allotment will shortly be made. The news from the property is considered highly satisfactory, and bids fair to be forthwith one of the best dividend gold properties now before the public.

Haltafall, 1½ to 1¾; the mines are reported as looking well, and the works are progressing in a satisfactory manner.

Michipicoten, 1½ to 1¾; Capt. Opie reports that in sinking the main shaft good ore is being raised, and that an important discovery of "strong copper" has been made in the Diamond drill boring on the new lode at a depth of 220 ft.

In Lead Mine shares there has been rather more business doing, and in many cases better prices have been obtained. Roman Gravels, 11½ to 12; as will be seen by the manager's report, the discovery at the 80 is looking well, and the 65 south end is worth 10 tons of lead ore per fm. Tankerville Great Consols, ½ to ¾; the satisfactory information has been received that the Pennerley portion of this company's property has been unwatred to the bottom of the mine (the 120), so that good returns of ore will now be made.

Gwyn-Mynydd, 1½ to 1¾; good progress is being made in the erection of the engine-house, the erection of the engine on the prosecution of the works generally, with every prospect of a commercial success.

British Silver-Lead, 1 to 1½; as enough has now been done to prove the great Newborough or champion lode to be very rich in ore for several hundred yards, the dressing machinery should be erected, and large quantities of rich ore sent to market.

Pant-y-Mwyn, 1½ to 2½; the 22, west of Modlyn, is still opening out a most powerful lode, much wider than seen in the levels above, and daily increasing in value, which no doubt will soon be the richest lode in Wales in the limestone formation.

In diamond mining companies shares an almost utter absence of business is reported, and the selling prices quoted are somewhat lower. Mr. R. W. Murray protests against the facts and conclusions given in this place with regard to diamonds and the diamond mining projects at present being placed before the public. He complains of diamond mining companies' shares being "mixed up" with the Exploration Company's in reference to the recent litigation. As both the Exploration Company and the Hope Diamond Mining Company were, nominally at least, interested in the appeal case, and no other companies were even mentioned, it was assumed, foolishly perhaps, that both had some connection with the dispute. The statement that diamonds from the South African mines are unsaleable at 30s. per carat all round is objected to. The only facts necessary to the Kimberley Central Company (one of the largest in the field—they sold nearly 29s. 2½d. per carat in the year at an average of nearly 31s. per carat), only obtained every quarter showing a decrease in the price per carat, and their balance at bankers was, as shown, only about 800l. in excess of their bills payable. If Mr. Murray desires figures they can be placed at his disposal, but only through the Journal.

The name of General W. F. Nuthall having appeared as a director in the prospectus of Great Wheal Polgooth, published in the Mining Journal, it is but fair to him to repeat that, as was stated at the time, he was taken by surprise by the issue of the prospectus without its having been previously submitted to a board meeting as provided, and that he formally resigned in writing on April 5, and on the same day, before any allotment had been made, sent in a written protest against any money subscribed being parted with until the statement in the

prospectus had been substantiated. General Nuthall suggests that there should be a legal supervisor of public companies, whose certificate would be of equal value to the public and to promoters of bona fide concerns.

The gross actual earnings of the New York, Pennsylvania, and Ohio Railroad Company for June amount to \$447,279, against \$368,456 for the corresponding period last year, and the net earnings to \$70,059, after deducting all charges, rents, &c., against \$38,125 last year, showing an increase of \$50,746 for the month. The result of the six months working shows a net surplus of \$386,402, against \$401,500 last year.

It is announced that the letters of allotment for the shares of the Rio Malagon (Sulphur, Copper, and Silver) Mines have been posted. An engineer will immediately proceed to the mines to inspect them in accordance with the terms of the prospectus.

At Swansea Ticketing, on Tuesday, 1486 tons of ore of 8½ average produce, and containing 130 tons 9 cwt. of fine copper, were sold for 7224l., being 4l. 17s. 3d. per ton of ore, 11s. 1d. per unit, or 55l. 7s. 6d. per ton of fine copper in the ore, and an average standard of 80l. 14s. 3d. for 9 per cent. produce. Subjoined are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
July 5 ... 4376	...	79 12 3	...	8 ½	...	10s. 8 ½ d. ... £53 11 2
August 2 ... 1486	...	80 14 3	...	8 ½	...	11 1 ... 55 7 6

Compared with the last sale, the advance has been in the standard 1l. 2s., and in the price per ton of ore about 1s. 10d. The Betts Cove ore gave an average produce of 5½, and realised 10s. 9½d. per unit; Union, produce 8½, per unit 11s. 6d.; Berehaven, produce 7 13-16, per unit 11s. 4½d.; Spanish, produce 17 11-16, per unit 11s. 2d.; Mostardeira, produce 8½, per unit 10s. 11½d. There will be no sale on Aug. 16.

At Redruth Ticketing, on Thursday, 904 tons of ore, of 7½ average produce, and containing 67 tons 4 cwt. of fine copper, were sold for 3407l. 3s. 6d., being 3l. 15s. 6d. per ton of ore; 10s. 1½d. per unit or 50l. 14s. per ton of fine copper in the ore, and an average standard of 87l. 14s. Subjoined are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
July 21, 2171	...	89 2 0	...	7 ½	...	10s. 2 ½ d. ... £51 11 2
Aug. 4, 904	...	87 14 0	...	7 ½	...	10 1 ½ ... 50 14 0

Compared with the last sale, the advance has been in the standard 5s., and in the price per ton of ore about 4d.

GAS SHARES.—The principal business in these shares, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, has been Bombay 4½ to 4¾; Commercial, 187 to 188; Continental Union, new, (1869-72), 15½ to 15¾; ditto ditto 7 per cent. pref., 25½; European, new, 9½; Gaslight and Coke, A, Ordinary, 183 to 184½; ditto C, pref., 224 to 225; Hong Kong and China, 16 to 16½; Imperial Continental, 182½ to 183; Monte Video, 14½; Rio de Janeiro, 25½; San Paulo, 14½; South Metropolitan, B, 184 to 185. For closing price, see list on the last page of Journal.

INSURANCE SHARES have, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, been dealt in as follows:—Alliance British and Foreign, 39; City of London Fire, Limited, 1¼ to 1½; Commercial Union, 25½; Employers Liability, 1¼; Fire Insurance Associated (Limited), 4¾; Lancashire and Staffordshire Fire, 1¼ to 1½; Marine, Limited, 2¾ to 2¾; Railway Passengers, 7½. For closing prices see list on the page of Journal.

TRAMWAYS.—The closing prices of this evening, as quoted by Mr. W. Abbott, of Tokenhouse-yard, are given in tabular form in the 12th page of Journal.

RAILWAY AND GENERAL MARKETS.—Referring to the course of business done to-day during official hours (11 to 3) Mr. Ferdinand R. Kirk, 5, Birch-lane, writes:—Opening: Yesterday's further advance at New York in Eries seems to be distrusted here, the price remaining at 45, Reading being unchanged at 34, Illinois Central have given way ½. Turks are still 17, Spanish offered at 27. Trunk Ordinary are down to 20; Doctech, 65 to 70; East Pool, 34 to 34½; South Frances, 14½ to 14¾; Wheel Peavor, 14 to 14½; La Plata, 1½ to 1¾; Eberhardt, 10s. to 12s. 6d.—Closing: The markets closed with a dull tendency. Turks rapidly receded to 16½; Peru Fives dropped to 17, and the Six per Cents. to 21½. In Brighton, A, the fall was ¾, and ½ in North British; Spanish could be bought at 26½; Consols dropped ¾. Eries and Readings each gave way ½; Glenrock, 1½ to 1¾; Quebrada, 4 to 4½; Richmond, 17 to 17½; Ruby, 6½ to 7. A further fall was established in Trunks, the Thirds and Ordinary being especially weak.

PANDORA.—We have pleasure in again stating that this valuable mine continues to open rich ore ground, and is improving. The 45 south is worth 25 to 30 cwt. of lead ore per fathom, and the stope in the back 2 tons, some of it being described as "splendid rocks of ore." The same level north is improved to 1½ ton. The sales of lead and blende this week fetched together 300l. 10s.

TANKERVILLE CONSOLS.—These mines are approaching a very important stage—namely, when returns will be made from Pennerley and Bog. From Tankerville part of the property they have sold this week 631l. worth of lead ore, and the stopes at Pennerley continue to look well, the number of men employed being increased, and will continue to be so. At Bog the water is drained about 6 fms. below the 70.

DEVON FRIENDSHIP.—Among the usual weekly reports in another column will be found a very satisfactory one from the managers of this important concern. Capt. Daw, of Norway, is at present in this country, and having again visited Devon Friendship and examined it carefully, he repeats his strong opinion that it is a splendid property. He never saw a finer lode in his life, and he is convinced that large courses of rich copper ore will be found in Bennett's lode (as were formerly met with in the north lode), under the great mass of arsenical mudic now being driven upon in the adit level. He estimates that for the 120 fms. in length opened upon in this level, and 30 fms. deep, this piece of ground will yield 18,000 tons of arsenical mudic, or at 30s. per ton—in money value 27,000l. This is irrespective of the immense quantities broken at surface and underground. He reports that everything is being pushed on with vigour, and that while the company has even already sold about 2000l. worth of produce he has no doubt a great deal more will be realised in the next six months. It is gratifying to see one at least of the recently formed companies bearing out so quickly and substantially the anticipations of success held out to its subscribers.

NEW PENROSE.—A tin lode has been discovered in the cliffs in this property, likely, it is said, to materially enhance the value of the shares. The company is proceeding quietly with legitimate mining. Capt. Curtis, the manager, is not a man to be induced to report on what is not before him in a practical meaning, and when he says he has a really good thing it is well known in Cornwall that he believes in it.

SILVER VALLEY MINES.—As evidence that whatever may have been the malpractices connected with the formation of the company for working these mines, the mines themselves are promising, it is stated that a letter was received in London from Capt. Bray, the agent at the mines, asserting that he has struck an exceedingly rich lode of silver ore and pyrites, which, from its character, he believes to be a continuation of the well known great silver lode which has formerly produced such rich silver ore.

OLD SHEPHERD'S MINING COMPANY.—In another column will be found the full report of the statutory meeting of this company held on Tuesday. From this it will be seen that the directors have adopted the wise course of personally visiting the property, and in this respect their conduct might be imitated by other boards to advantage. When on the spot they called into their counsels some of the most experienced mining experts in Cornwall, and then and there arranged a bold and comprehensive plan of action for the complete development of the mine. Although the company has only been four months established a good deal of preliminary work has been done, and this has shown (vide the statement of Mr. Henry Brown, the purser) the western ground particularly to be more promising than was originally thought. The arrangements for the erection of the machinery have proceeded with energy and dispatch. One second-hand engine, as good as new, has been purchased at a ridiculously low rate, and the person who sold it is now said to be lamenting his precipitation. In the same way another engine was secured for Messrs. Harvey and Company, which, though secondhand, is also equal to new. In the allotment of the shares the directors have acted upon a principle which would have prevented many serious complaints had it been adopted by their contemporaries associated with other companies. They allotted shares to every applicant although the number applied for was between four and five times in excess of the number they had for disposal. Applicants for 10 shares and under were allotted the full number

applied for, and hence the company is composed of real bona fide shareholders, as distinguished from mere speculators who wish to catch the few shillings that can be got out of the market rise. So far as can be judged from the report of the statutory meeting the company has been conducted with ability and on a system of fair dealing with the shareholders and the public, which cannot be too highly extolled.

PRINCE OF WALES SLATE QUARRY, CARNARVONSHIRE.—It is understood that work has been commenced at this property (the prospectus giving particulars was advertised in last week's Journal), and it is expected that the level now being driven across the western vein will in two months' time open into very good slate rock, which can be worked with great facility without any machinery. A machine house, with sawing and planing tables, has already been erected, so that by the time named everything will be ready for a large monthly make of slates.

CAPPER PASS AND SON, BRISTOL,
ARK BUYERS OF
LEAD ASHES SULPHATE OF LEAD, LEAD SLAGS, ANTIMONIAL LEAD, COPPER MATTE, TIN ASHES, &c
and DROSS or ORES containing
COPPER, LEAD, AND ANTIMONY.
GEO. G. BLACKWELL,
CHAPEL STREET, LIVERPOOL,
HANDLES ON PURCHASE OR SALE
MANGANESE, ARSENIC, FLUOR-SPAR, WOLFRAM, BLENDE, CALAMINE, CARBONATE AND SULPHATE OF BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONE, COHRRES AND UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS, TALC, PHOSPHATE OF LIME, &c. Also, ORES CONTAINING LEAD, ZINC, AND SILVER, IN COMBINATION.
EDGAR JACKSON
(Associate Royal School Mines),
ANALYST AND ASSAYER,
Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores.
ASSAYING TAUGHT.
106, QUEEN VICTORIA STREET, LONDON, E.C.

MINES SHARES.—I am a BUYER of FIVE HUNDRED TAMAR and ONE HUNDRED VAN LEAD MINE SHARES. Seller please state lowest prices. I am a SELLER of the following. No reasonable offer refused for Tin Hills, South Darren, Organo Gold, Herodsfoot, East Craven Moor, East Botallack, Wheel Jane, and Grey's Brewery shares.
Address, ALEX. J. DAVIDSON, care of Messrs. Deacon, 154, Leadenhall-street, London, E.C.

A GENTLEMAN would be glad to SELL the following SHARES for any reasonable offer:—THIRTY LADY ASHBURTON, fully paid; TWENTY GREAT POLGOOTH UNITED, fully paid; TWENTY SILVER VALLEY, 10s. paid.
Address, "1021, X," MINING JOURNAL Office, 26, Fleet-street, London.

WANTED, by a Gentleman, 42 years of age, married, with a family, AN APPOINTMENT as CASHIER and BOOK-KEEPER, &c., or any SITUATION of TRUST. Good references for the last 20 years.
Apply, "R. O.," MINING JOURNAL Office, 26, Fleet-street, E.C.

WANTED, a CORRESPONDENT to FORM a COMPANY, to WORK a BONA-FIDE MINERAL PROPERTY in CORNWALL. Free from ordinary risk—no bubble scheme. Correspondence desired and promptly attended to.
Address, "Argus" MINING JOURNAL Office, 26, Fleet-street.

WANTED, TO HIRE, ONE HUNDRED (8 ton) COAL WAGONS, for twelve months from September next.
Tenders, to include keeping the wagons in repair, &c., to be addressed to "C. C.," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

WANTED ENGINEER.
ON DEMANDE, UN INGENIEUR ANGLAIS, sachant le Français, POUR LES MINES D'OR DU VENEZUELA.
S'adresser, a P. F. SIMON et Co., 82, Queen-street, Champs-Élysées.

SETT QUARRY.
THE OWNERS of the MOST VALUABLE SETT QUARRY in the Kingdom desire to MEET WITH a GENTLEMAN with CAPITAL, either with a view of PARTNERSHIP or PURCHASE, or FORMING COMPANY. Capital required, from £4000 to £8000. Full particulars to bona fide applicants.
Address by letter to "Dadoc," MINING JOURNAL Office, 26, Fleet-street, E.C.

FOR SALE, the WHOLE or PART:—

100 Sentain, 15s.	250 West Caradon, £1.	50 Mona.
120 Pierrefite, 16s.	300 New West Caradon, 10s.	100 Oregam, 16s.
50 Wheal Elizabeth Tin, £1.	300 East Crebor, 6s.	100 South Indian Gold, £2.
100 Van and Glyn Amalgamated, 5s.	300 West Devon, 15s.	100 Wheal Jewell, 14s.
50 ditto, pref. 14s. 6d.	150 West Crebor, 9s.	100 West Phenix, £1½.
100 East Blue Hills, 11s.	120 Almada and Tiritio, 6s.	100 Okel Tor, £1
	300 Hungarian Cop., £1 paid, 14s.	100 New Zealand Kapanga 7s. 6d.

H.W. has also FOR SALE, and which he can specially recommend for investment as also for the rise in price, £750 Ruby and Dunderberg, 10 per cent. mortgage debentures. Dividends payable half-yearly (June and December), with option of conversion into ordinary shares at par until June, 1882.

H.W. has also FOR SALE a policy on the life of a gentleman in his 78th year, issued by a first-class company; sum insured, £2000; bonuses added, £1680. There are charges on the policy as follows:—Loans from office, £457 at 5 per cent., and £228 on which no interest is payable. Annual premium, £137 5s.; payable, December, 1881. Another bonus of £400 will be added if the assured lives over December, 1885.

Bankers—London and Provincial.
Address, H. WILKINS, 1, Tamworth Villas, Tottenham.

WE ARE SELLERS OF THE FOLLOWING:—
Offers for any portion invited.

10 Union Trust.	10 Devonport and Tiver-ton Brewery.	70 East Craven Moor.
50 Grey's Brewery.	500 Wheal Jane.	45 West Craven Moor.
40 Organo Gold.	30 South Darren.	125 Herodsfoot.

ENDEAN AND CO., 85, GRACECHURCH STREET.

TAMAR SILVER-LEAD AND FLUOR-SPAR MINE.—The success of this mine is almost *un fait accompli*. Indications in the 27 fm. cross-cut south are favourable for cutting into a rich body of silver-lead at any moment, which will cause shares to rise to £5 or £10 each.

It is therefore not surprising to find parties who have sold shares which THEY CANNOT DELIVER using every endeavour to get hold of them cheaply, and with this object in view "bogus" lots are advertised, and said to be sold by auction at ridiculously low prices. As a matter of fact, no transfers ever come into the company's office for these cheap lots so advertised.

CAUTION TO SHAREHOLDERS.—Don't be frightened into selling your shares AT ANY PRICE till the nature of the recent discovery is more fully ascertained.

BUY EVERY CHEAP SHARE YOU CAN GET, but do not part with your money until you receive the certificate. By adopting this course you will frustrate the designs of those who depreciate the value of your property by selling shares at low prices, which they do not and cannot deliver.

BEWARE OF PEOPLE SEEKING TO EXCHANGE shares of no value for Tamars.

THE NEW DISCOVERY holds good, the lode being 3 ft. 6 in. wide, producing splendid silver lead, which is much richer in silver than when the lode was first cut into. A sample assayed by Messrs. Johnson, Matthey and Co., on the 2nd inst., gave a produce of 73-500 ozs. of silver per ton of 20 cwt., and 80 per cent. of lead. This is the most valuable discovery made in the district since the days of South Tamar. It is, in fact, the same rich lode which produced over £1,000,000 worth of silver-lead in that mine.

Buyers and Sellers of Tamars should communicate with Messrs. ENDEAN and Co., Stock and Share Dealers, 85, Gracechurch-street, London, E.C. Established 1861.

Bankers—London and Westminster Bank, Lothbury.

ABBOTT & CO.,
SWORN BROKERS,
9, CORNHILL,
LONDON, E.C.,
OPPOSITE THE BANK.

Just Published—AUGUST Circular,
DIVIDEND PAYING INVESTMENTS.
Post free on application.
WHEAL GEORGE.
Special Mining Reports. £30,000 worth of mineral already discovered.
All investors should read this Circular.

HART'S PNEUMATIC MINERAL SEPARATOR.

This machine, working on the jiggling principle, concentrates gold and auriferous pyrites, silver, tin, copper, lead, blende, and other stamped or finely crushed minerals, termed fine sands and slimes.

The primary condition for separation of mineral particles differing in specific gravity is that they be free to move in a fluid medium. Air fulfils this condition; water, on the contrary, will pack fine particles together, forming a cake or a paste, which explains the more rapid and more complete separation in air. The multiplication of processes and of machines indispensable in the water system is consequently avoided, with the losses that attend it.

The PNEUMATIC MINERAL SEPARATOR works in accordance with the laws of air in motion resisted, but not obstructed, by the particles under treatment, and is the only single machine which completes the separation of fine sand and slimes.

Patent Rights for Great Britain, India, Colonies, and Foreign Countries for Sale.

Address, "H. P. M. S.," MINING JOURNAL Office, 26, Fleet-street, E.C.

Notices to Correspondents.

* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

WEST POLGOOTH.—Can any reader of the Journal give information respecting the West Polgooth Mine. The last meeting was held some 12 months ago. Is anything being done at the mine? and are the shares marketable?—*T. O. K.*

METAL QUOTATIONS.—"G. S. E." (Breslau)—It is scarcely reasonable to expect that we should give you the source of our information; but it will probably suffice to state that we never deal in metals, and that we have never any bias in favour of buyer or seller. We do not know whether you are Käufer or Verkäufer; but many of both classes arrange, like yourselves, to make our quotations the basis of price not only for lead and zinc, but also for copper, quicksilver, and other metals, and the test of many years has proved that justice is done to both parties.

Received.—"G. F. G." (Saxony)—"W. H. F."—Shareholder (Glasgow): No to both questions: we never attend to such matters—"W. R." (Redruth)—"A Mouth Man" (Monmouth)—Shareholder (Berlin)—"B. N. W."—Old Reader (Shrewsbury)—"E. J. G." (North Wales Freehold Copper)—"N. R."—"G. W. Q."—"G. H. P." (Dublin)—"H. B."—Shareholder (South Conderrow): You should attend the meeting on Wednesday, and ascertain the per seculars you require—"R. S. W." (Cien Calvados)—"T. M. M."—"J. G. S." (Kilmarnock)—"A. R."—"W. F. R."

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, AUGUST 6, 1881.

THE DURATION OF OUR COALFIELDS.

The extraordinary production of coal in 1880, so far in excess of what was previously probable or even possible, naturally again raises the question as to the duration of our coalfields, which was first brought under notice by Sir W. ARMSTRONG in his presidential address to the British Association in 1863, when he drew attention to the alarming growth of the output of coal, and calculated that, assuming an arithmetical increase in output similar to that of the average of the eight preceding years our total stores of fuel to a depth of 4000 ft. would be exhausted in 212 years. Now, in 1886 the production of coal was 66,645,450 tons, and in 1863 it was 36,292,215 tons, so that the increase in the two periods was less than 20 million tons, whilst last year alone the increase over 1879 was more than 13 million tons, so that if Sir W. ARMSTRONG had seen so far into the future the calculation would not have left much more than 100 years for the exhaustion of our coalfields. Following the wake of Sir W. JACKSON there was the work published in 1865 by the late Professor JEVONS, one of the highest authorities, when he showed that the rate of growth in the output of coal was not an arithmetical one but a geometrical one, and that consequently, on the assumption of its interrupted continuance our coal should be exhausted in 110 years from 1865. Mr. HULL, Director of the Geological Survey of Ireland, made a careful estimate of the total quantity of coal existing in the known coalfields of this country, and gave it as his opinion that the coal fields would be exhausted in 1200 years. These statements, however, caused such an amount of excitement that at last a Royal Commission was appointed to enquire (1) What was the amount of coal which we possessed in the known and concealed coalfields and in other districts of England when there was a possibility of coal being found. (2) The coal supplies of other countries. (3) As to whether there were any other serious items of waste in the use of coal which could be remedied; and (4) as to the nature of the export trade. Five years were occupied in the enquiry and the report of the Commission, which comprised the most eminent practical engineers and geologists in Great Britain was published in 1871. From that report it appeared that there was a total quantity of 139 thousand millions of tons available with a depth of 400 ft., which at the rate of consumption in that year (1871) would last for upwards of 1260 years. In the estimates seams of less thickness have been included, so that there is a considerable margin for deduction from the totals given, whilst it may also be said that the thick seams will be worked first, as it is only in the last extremity that the thin ones will be resorted to.

In 1860 Mr. HULL made a calculation that the quantity of coal down to 4000 ft., excluding seams between one and two feet, was about 80,000 millions of tons, and at the rate of 1880 it would consequently last only about 530 years, but with the yearly increase that has been going on the reserves of course would not last half the time. But coming to the present time, the rate of increase in consumption has been so extraordinary that the past calculations of the most eminent writers and experts have been very wide of the actual mark. This will be seen from the deductions from the latest returns which have been issued in 1871 from the Commissioners' report, the available quantity of coal in the United Kingdom at a depth of 4000 ft. was 139,156,000,000 tons, and if from this is deducted 1,311,000,000 tons raised between 1870 and 1880 there would be at the close of the last-named year 137,845,000,000 tons yet to be raised from depths down to 4000 ft., including all the thin seams that could not be worked at the present time unless at a very heavy loss. At the rate of consumption in 1870 the Commissioners stated the coal would last 1260 years. But the consumption of coal so far from remaining stationary in 1870, but never to anything like the extent which took place in 1880, as compared with the previous year, when the increase was equal to about 9 per cent. However, were the production of 1880 to remain stationary—which is not likely to be the case, but quite the reverse—the present quantity left unworked would be sufficient to last for about 938 years, so that there is a deficit of 322 years in the computation based on the production of 1870 as compared with that of 1880. In 1855 the quantity of coal raised in the United Kingdom was 64,463,670 tons, so that the increase in 1880 from the former period was equal to 128 per cent. in the 25 years. But should the output of coal for the next 25 years be based on the increase which took place in 1880 over 1879, and were it to continue in the same rate at the end of 1905 our stores of fuel would be reduced to something like 13,500,000,000 tons. The output would then be at the rate of 1,200,000,000 tons a year, whilst without any increase for that period, the supplies would be exhausted in about 105 years. But it should be remembered that the estimates of the Royal Commission, being based on thin seams under 2 ft. a deduction on that account should be made according to Mr. HULL of five per cent., or 1-20th, which would give a truer result than that recorded by the Parliamentary Commission. This of course would diminish considerably the duration of our coal supplies upon the basis of an arithmetical increase of 3,000,000 tons a year made in 1870 (that having been the increase for the previous 14 years), it was computed that the consumption at the end of 100 years would be 18 millions

tons, and the estimated available quantity would be only sufficient to last for 276 years, but as the increase during the past 10 years has been at the rate of 3,500,000 tons, the exhaustion of coal would of course be much earlier. If the data given is at all reliable it will be seen that our coal fields will not last so long as many people have been led to believe. Should the present rate of increase at the rate of 13 millions tons go at the same ratio, it is evident that the calculations of Sir W. ARMSTRONG will not be so very wide of the mark, whilst the 1260 years laid down for the produce of 1870 will be entirely fabulous. Of the various coalfields Coalbrookdale will be the first worked out, as its exhaustion is rapidly going on. The Forest of Dean, the minerals of which belong to the Crown, cannot last so very long, seeing that some of the seams are very thin, whilst the thickest are being worked, and taking the whole of them, even at the present rate, the field would only last about 360 years.

According to Mr. HULL, in South Staffordshire there is only sufficient coal at the present rate of production to last 220 years. Cumberland, so well known for its hematite ironstone, and with a good many collieries with fuel for smelting as well as for exportation, will be the first field of coal that will be finished, and with the present output will be exhausted in about 230 years. Leicestershire is in about the same position, and its life as a coal-producing county cannot last above 260 years. The greatest coal districts in the kingdom are those of Durham and Northumberland, and last year these counties raised 36,596,296 tons of coal, being an increase of 6,280,260 tons over 1879. Were the production to be continued at the same rate as in 1880 the coal field would only last about 230 years, but were the increase to go on at the same rate as in 1880 over the previous year, of course that period would be lessened considerably. Scotland has greatly increased its output of last year, more than usually high, the field would not last more than 360 years. The Midland coal field is the largest in England, and comprises Nottinghamshire, Derbyshire, and the West Riding of Yorkshire, and the demand made upon the resources of it have not been of such an exhausting character as in some other districts. With its present production it will last upwards of 1000 years. South Wales, the largest field in the kingdom, has the heaviest supplies of fuel unworked, and will, therefore, be of the longest duration; and, at the present rate of production, the stores would last about 1500 years. It will thus be seen that our resources of fuel are far below what has generally been considered by those who have paid any attention to the subject, and that the time has arrived when economy should become the rule, and every invention for that purpose should be carried out to the fullest extent. Should the annual increase go on to anything like the extent it did in 1880 it is evident that our coal fields will become of greater value than they now are, as the process of denudation goes on. For some years to come there will be no change, in all probability, but the time will come when the production will be nearer to the consumption than it is at present; but, as has been forcibly pointed out by Mr. JEVONS and others, all economical appliances and inventions, so far from reducing the consumption of fuel, are followed up by an increase. The question of the duration of our coal fields, however, is one of the most important that can be considered by our legislators as well as others, and the time has arrived when it must receive greater attention than it has yet done, and we think that in the interest of the public and mine owners it should not be overlooked or forgotten.

AMERICAN RAILROADS, AND THE IRON TRADE.

Although the market for American railroad securities has shown rather less strength during the last two or three months, principally in consequence of an anticipated falling off in the movement of grain upon the great trunk lines, there seems no real reason for supposing that American railroad prosperity is declining. When we use the words "American railroad prosperity" we ought to employ them in a comparative sense, because there are even now a considerable number of more or less important American railways which are unable to pay their stockholders any dividends. Viewing the American railroad interest, however, as a whole, it is still undoubtedly in a better position than it has ever before occupied. Thus in June last year an increase of \$3,989,215, or 30 per cent., was established upon 43 American systems, although the receipts of June last year were 37 per cent. above those of June, 1879. It is traffic, of course, which gives vitality to the railroad interest, and in spite of all lugubrious prophecies traffic continues to expand upon American railroads at a great rate. It is, of course, not by any means certain that this increase will continue to be witnessed when the traffic bulletins have to compare with those issued in the autumn of 1880, when an active grain movement swelled the earnings of most of the great American lines. There is little doubt that the American harvest of this year is less abundant than that of 1880, and the movement of grain will be proportionately reduced. But, on the other hand, the general business of the United States is probably in a sounder and better condition than at any former period in American history. This is due, first, to the accumulation of capital which has taken place in the American Union during the last 10 or 15 years; secondly, to the great growth of population; thirdly, to the establishment of greater political harmony between the various States; and, fourthly, to the resumption of specie payments, and the consequent placing of the commerce of the country upon a sound and reliable basis. These are great and happy influences, the effects of which are not likely to pass away all at once, just because the wheat yield of the present year is somewhat smaller than that of 1880.

We have gone into these details in illustration of the present position of American railroads, because the prosperity, or at any rate, the comparative prosperity, of the American railroad interest has a direct bearing and influence upon the iron trade upon both sides of the Atlantic. If times go pretty well with American railroads, the existing lines throw out feeders and extensions, and an immense impetus is given to the work of American railroad construction generally. In proof of this, we may cite what is now passing in the single State of Texas. American railroad credit, being strengthened by the remarkable buoyancy of American railroad traffic, the railroad engineer has gone to work in Texas as well as in the other western and south-western States of the Great Republic with extraordinary vigour. Railroad projects are stated to be so numerous just now in Texas that it is well nigh impossible to keep up with them. To say nothing of independent new lines fifteen companies are building extensions. About 662 miles of new railroad were built in Texas in 1880, and more than that length has already been built in 1881. The narrow gauge system of Texas included 528 miles of line at the beginning of 1881, and the amount of narrow gauge track projected is described as "enormous." This is not a very bad illustration of what is passing in connection with railroad development in the United States, and the result must be beneficial to the iron trade of both hemispheres.

THE TRADES UNION CONGRESS, AND MINING LEGISLATION.

In the next session of Parliament some measures, we are told, will be introduced on behalf of the working classes, but more especially with respect to those engaged in mining operations. This we gather from the programme for the Fourteenth Annual Trades Union Congress, to be held in London in September next. One of the subjects for discussion is the bill to make the Employers' Liability Act compulsory. So far as we are aware no person, excepting Mr. MACDONALD and a few of his way of thinking, have found fault with the Act at present in force. Mineowners, who, as a class, are the most interested in the Liability Act, with very few exceptions indeed, have allowed the Act to run its course, unless where the workmen have desired to come to an agreement to work outside of it, and this they have done in their own interest. The Act only gives compensation for accidents where the employer by himself, or others representing him, have been culpable; but bodies of workmen have found it to their advantage to have their employers subscribe to a fund, not only to provide for them in case of accident, but in sickness as well, and in case of death to maintain the widows and children. Such a wise and provident intention on the part of those who have nothing but their labour to depend upon, and are unable to save anything for the day of adversity which comes sooner or later; Mr.

MACDONALD and some others would render impossible. Employers have nothing to fear from the Act being made compulsory, as it is in most of the principal mining districts at the present time; but the workmen in many places would lose a great deal were it so rendered. In a case of so much importance to workmen and their families, we certainly think they are the best judges of what is most conducive to their own interests, and we think it would be better were there an Act passed to make it compulsory on the part of workmen to make provision in the case of accident, sickness, or death, so that neither them nor their families would have to be dependent upon the support afforded by the poor-law officials, as so many have to do at the present time. It is also proposed to reform the magistracy, with a view to the reconstruction of the Petty Sessions Court. This, we opine, is one of the results of the strong remarks contained in the report of the Inspector of Mines for Cornwall as to the leniency shown by magistrates in mining cases that came before them, the reason assigned being that they were all more or less connected with mines themselves. If the magistrates in Cornwall are connected with mines, how is a bench to be formed without them, seeing so many of those qualified for magistracy have something to do with mining property. In the Coal Mines Regulation Act persons interested in collieries are not allowed to adjudicate in any case relating to mines or workmen, it will be sought, we believe, to have the same provision made applicable to metalliferous mines. Then there would be found the greatest difficulty in forming a bench of magistrates for the hearing of a mining case. In the coal mining districts this difficulty is constantly arising, and, of course, would be more frequent in the localities where metals were being raised. The patent laws are also to be taken into consideration, although the question is one that does not appear to touch materially the trades unionist; but then the representatives of the working classes are always open to discuss any question that is of not the slightest interest to their constituents, for they must occupy a certain number of days in congress. Land co-operation, the codification of the criminal law, the reform of the jury law, trades unionism, and other subjects are to be discussed, with a view, we suppose, to mould them so as to make them advantageous to the working man, who at times has so many friends to look after his interests, which costs them nothing, but from whom he must never expect pecuniary assistance, however necessary they may be to him and his family at times. Sir T. BRASSEY, M.P., is to read a paper on "Capital and Labour," so that the Congress promises to be fully as interesting as any of its predecessors.

THE ELSWICK WORKS, NEWCASTLE.

The members of the Institute of Mechanical Engineers, on the occasion of their annual meeting, visited the works of Sir W. G. Armstrong and Co., which stand alone in this country for ordnance and other material. The works were established in 1847, and have turned out hydraulic machinery of all kinds, as well as engines, boilers, wrought-iron rifled cannon on the coil system, gun carriages, Palliser chilled projectiles, Gatling guns, torpedoes, &c. The works cover an area of about 40 acres, with a frontage to the Tyne nearly one mile in length. The blast-furnaces are 75 ft. high and 21 ft. in diameter of bosh. The number of hands employed is generally close upon 4000, and the ordnance works are capable of turning out upwards of 80 tons of finished per week. Amongst the appliances at this levathan establishment are shears connected with a jetty capable of lifting a weight of 120 tons. At the works were turned out the two largest guns ever made. They were on the coil principle, each 100 tons, and made for the Italian Government. Some of the machinery is of a novel and peculiar character, especially that used in the forge, where there is one hammer with a head weighing 30 tons, and a stroke of 6 ft. 6 in. was used for welding the coils of the cannon. In forging the blooms a squeezer is used, which, no doubt, will be an attraction to all visitors, and which is well worth noticing. In power the squeezer bears some relation to the steam hammer, but it is set horizontally instead of perpendicularly, whilst the force of the blow is exerted in the form of steady pressure instead of a sudden blow. The bloom is taken direct from the furnace to the squeezer by means of a sliding carriage moved by hydraulic power.

Being placed on what may be termed the floor of the squeezer itself, at either side of the floor being an immense square block of iron. When the pressure takes place a square iron trap in the floor underneath the bloom opens downwards, and the cinder falls into a receptacle below. The trap then returns to its place, and at the same time a movable block which is made to move forward—the bloom having previously been caught between the two sides of it and squeezed—travels back. The iron trap then opens again, but this time upwards, and catching the ball tilts it up and turns it over. The movable head again comes forward, and gives the iron another squeeze, and then goes back. The metal having been turned over, it has to be turned round, which is done by the machine with ease. Over the floor is an inverted hydraulic ram, to the end of which is attached a horizontal disc full of holes, in which are fitted a number of thick iron pins with their points downward supported by their heads. For the purpose of turning the bloom the ram and disc are lowered upon it, and a rotary motion is then imparted. The ball is then caught by the pins and slewed round to the required extent, and then the disc and pins ascend to make room for the movable squeezer, which coming forward again repeats its action, and the whole of the process can be repeated as frequently as necessary, the ball being either thrown by the iron trap beneath or slewed round by the pins of the suspended disc, the pins in which are fitted loosely in their sockets, so that those which touch the top of the bloom in the descent slide upwards. The squeezer has a stroke of 6 ft. 6 in., and the cylinder in which it moves weighs 22 tons, and is capable of giving a squeeze of upwards of 750 tons. All the motions of the squeezer, as well as of the iron carrier, are worked by hydraulic power. The process is a most interesting one, as are many others that are carried out at the vast works built up by Sir W. Armstrong, the great ordnance producer of the day, and who has no equal with perhaps the exception of Krupp, the German maker of steel ordnance.

A NEW REGISTERING THERMOMETER.—Meteorologists and persons connected with mines have long complained of some of the instruments not being so sensitive or reliable as could be desired; but a new instrument in the shape of a thermometer registering the extremes of heat and cold has just been brought out by Mr. E. F. SPLINTER, of London. When mounted the thermometer is about 13 in. in length by 3½ in. The bulb consists of two limbs, and the stem of three. On one part of the stem there is a graduated scale for the maximum reading and another for the minimum reading. The mercury of the bulb at ordinary temperatures rises about 24 in. in the ascending limb, at which point it meets spirit, which continues round the first bend into the descending limb to the level at which it commenced in the ascending. Mercury is here introduced, filling the lower part of the descending limb, and being continued round the second bend to about half the height of the compensating limb. The registered maximum readings are indicated by the height to which the mercury in the ascending limb has pushed an ordinary steel indicator into the spirit above, and the minimum readings by the height to which the mercury in the descending limb has pushed up a steel indicator. The compensating arrangement is one of the peculiar features of the new instrument. If the bulb of the instrument be immersed in water at 120° Fahr. the maximum side will act correctly, whilst the minimum side will show from 4° to 6° of error. The whole instrument being then immersed in water the compensating limb and the counter pressure bulb at once come into play, the ascending and descending limbs are instantly brought into harmonious working, and their indications become absolutely the same. The instrument has been fully tested by Mr. Whipple at the Royal Observatory at Kew, and he states that "its action is highly satisfactory, and that both tubes indicate the temperature to which the instrument is subjected with great accuracy. The arrangement of the counter pressure tube at the back, termed the compensating limb, appears to answer its purpose most efficiently. The instrument will enable meteorologists to register low temperatures without feeling the uncertainty which is always attached to a common barometer or an ordinary alcohol thermometer. But the thermometer is not an ordinary alcohol thermometer, due to the

volatility of the spirit and to its sluggishness of action. The bulb being so constructed as to expose a considerable surface to the air, its indications follow the fluctuations of atmospheric temperature with great rapidity, almost equal to that of an ordinary standard mercurial thermometer."

THE PROFITS OF THE INDIAN GOLD MINES.

The judgment of Vice-Chancellor Hall, in the celebrated case of *Harris v. Fleming*, was delivered on Monday, when his Lordship said that the plaintiff and the defendant Morton allege that on May 14, 1879, a verbal agreement was come to between the plaintiff and the firm of Nicol and Co., acting by Maxwell, a member of the firm, that the plaintiff and Morton and Nicol and Co. should be jointly interested in a certain adventure, being the working of a mineral property called Seeputee, and any other mines to be acquired in the Wynaad district, each of the three parties having a third of the profits of the adventure, and the plaintiff by his action and claim and the defendant Morton by counter claim seeks specific performance of the agreement. These two persons, Harris and Maxwell, are the only persons who can personally give evidence as to there having or not having been such verbal agreement—i.e., no other person was present on the occasion, Morton's presence being only after the entering into of the alleged agreement, and when it is stated the alleged agreement was mentioned to him. The two persons by their evidence have deposed to there having been such agreement come to. Maxwell has deposed that there was not such agreement. It is for the plaintiff and Morton to establish the agreement which they seek to enforce. They have not done so. I do not believe them. Their evidence is not to be relied on, and, further, I say that it is untrue. Their evidence has satisfied me that there never was such an agreement, and that the plaintiff acted in such a manner as stated in his endorsement on the declaration of trust as agent or trustee for Nicol and Co. I find that Nicol and Co. were the sole principals in the adventure, and the Seeputee was not an acquisition for a partnership of which the plaintiff and Morton were members. I have, of course, considered carefully the entries of the diary, which were not having been tampered with, and as being for all purposes evidence for the plaintiff; but I consider them as not recording truthfully what passed at the interview in question.

The plaintiff and Morton were each to be remunerated by having given to them by Nicol and Co., if the adventure turned out well, a share or interest in the profit of the adventure, which share or interest was to be defined by Nicol and Co., but which upon the evidence I find was not only not one-third each, but was to be some smaller share, and was to be received and had only as and for the plaintiff and Morton, i.e., I find that equality between the three parties was not only not expressly agreed upon, but cannot properly, in the absence of express agreement, be implied or adopted. I consider that the sole proprietor of the adventure was the firm of Nicol and Co., and that the plaintiff acted and was their agent in the acquisition of Seeputee and any other mining rights, he and Morton having given them an expectation of a share or interest, depending upon Nicol and Co. having given them if they should have done so a share or interest. The plaintiff and Morton were, I find, only to be interested if the adventure, i.e., Nicol and Co.'s adventure—turned out well, and then only upon Nicol and Co. having assented to their having some defined share, which would be much less than a third each.

The plaintiff's action and Morton's claim are, I consider, by the writ and by the statement of claim and counter claim, limited to establishing an express contract. This they have failed to do, and for this reason alone the action and Morton's counter claim must be dismissed. I have, however, as above, gone further into the case than I conceived necessary by stating my view as to there being an implied agreement that the plaintiff and defendant Morton should be jointly interested each have one-third, or should have had in any way a right implied agreement, to imply such an agreement or hold right to exist would, I think, be to imply or hold that which I am satisfied would be altogether at variance with what was meant and what would not be just as between the parties. I think any right in any way is displaced and rebutted. I was asked at the close of the plaintiff's reply that the plaintiff should have leave to amend his pleadings. At such a stage of the case I should not have allowed this, but considering the evidence to be such as I do I should do so for the plaintiff and Morton no good whatever. The result of the litigation would not be thereby varied. There is much in this case which I have not gone into in this judgment. I think it proper to say that I must not be considered as being of opinion that the plaintiff would be entitled to relief had I found differently as to the facts than I have done. The plaintiff's case may be affected by his absents himself, particularly as he was to be manager, and his and Morton's case may be affected by their attempted dealings with the property; and as to Morton, by his having been willing to abide by Mr. Fleming's determination as to the share or interest he would have. In the action of Harris, judgment for the defendant, with costs, to be paid by plaintiff Harris to all the defendants except Morton. In Morton's counter action, judgment for the defendant, with costs, to be paid by Morton to all the defendants thereto except Harris.

On counter claim of Macaulay and Moore and Indian Gold Mining Company (Limited), I declare that Harris and Morton are not beneficially entitled to or interested in the several properties mentioned in the statement of claim and forming the subject of Harris's action, and that all grants, leases, or assignments made to Harris were so made to him as trustee for William Nicol and Co., and that the company are entitled to have the agreement, dated April 15 and 17, 1879, stated in the 17th and 18th paragraph of the statement of claim specifically performed; and the plaintiff Harris is to execute a proper assignment to the company of the leases of the Seeputee estate transferred to him, such assignment to be settled by the judge in case the parties differ, and Macaulay and Moore and the company are to be at liberty to appeal in chamber for the execution by any proper parties, including Harris and Morton, or either of them, of any other assurances or instruments which to the judge shall appear necessary or proper to be executed, to give effect to the said agreement or the above declaration, or any of them, and the costs of the said counter claim Macaulay and Moore and the company up to and including the hearing are to be paid by Harris and Morton.

As to the fund in Court, the sum to be paid out to Macaulay and Moore; but if all or any of the costs herein made payable to the company shall not have been paid, the company are to be first, and their costs out of such fund, and are to be at liberty to apply in chamber for an order for such payment. Upon payment thereof, the amount to take out of the fund in Court shall be repaid to Macaulay and Moore by Harris, or Harris and Morton.

BRITISH MACHINERY IN BRAZIL.—Upon the occasion of the recent tour of the Emperor and Empress of Brazil and a party of Government officials through the province of Minas Geraes, one of the principal features was the inspection of the celebrated St. John del Rey Mines. The distinguished party also inspected this company's Cuiabá Mines, and it is gratifying to know that some of the English mining machinery was brought under their special notice—the patent pneumatic rock-drilling machinery, manufactured by Mr. J. G. CRANSTON, of Newcastle-on-Tyne, having been witnessed in full operation. It is not doubted that this machinery will now be employed in Brazil, not only for the rapid development of gold mines, but in the construction of canals and railroads which are likely to be made in various directions. The Royal party, under the guidance of the mines superintendent (Mr. Pearson Morrison), were in no way deterred from entering and traversing the whole distance of the tunnel amid all the noise and busy turmoil necessitated in the carrying out of this great enterprise, where they saw the rock-drills at practical work rapidly and fiercely pounding away at the face of the hard rock in the tunnel forebreast. The Emperor and Empress displayed great interest in the inspection of this excellent machinery, and were highly pleased with all they saw.

BRATSKOPPE COPPER MINES.—The following report, dated July 15 last, has been received from Capt. Daw, and cannot fail to be highly satisfactory to the shareholders:—

I beg to inform you that, York, one of the directors, has just visited the mines, and was well pleased with everything he saw. Since my report of Nov. 29, 1880, many good improvements have taken place in the mines, more especially in the Hoffnund lode. The No. 2 adit east has very much improved, the lode being fully 3 ft. wide, composed of quartz and rich copper ore; worth for the latter 1½ ton of 22 per cent., or over 200 per fathom. As this is our most western point, and every fathom driven gives upwards of 80 fms. of backs, its importance cannot be over estimated. The lode in the No. 3 adit, 20 fms. below this point, and about 90 fms. to the east, is over 3 ft. wide, yielding 2 tons per fathom, or, in money value, 25*l.* About 50 fms. to the east of this shaft is being sunk, which is named York's. It is now about 40 fms. under the adit, the lode being over 4 ft. wide, and worth 3 tons, or 38*l.* per fathom. Also about 120 fms. to the east of this we are sinking another shaft, which has not yet been named; it is about 15 fms. under the No. 3, or lowest adit, the lode being fully 2 ft. wide; worth 1½ ton, or 20*l.* per fathom. In this piece of ground alone I value the copper ore discovered at over 100,000*l.*; and taken into consideration the large quantities of ore laid open by the workings already made, I do not hesitate to say we have a great deal more than 200,000 tons of ore, which can soon be made available for stopping after the proposed new machinery is erected. It is intended to erect two 30-horse power drawing engines to take the place of the present horse-wheel, and also to drive our levels with boring machinery, the motive power being a 200-horse power turbine. We having a never failing supply of water of many thousand horse-power running close to the mines, which is a great advantage over steam, being a dividend in itself. When this is completed the profits will be very largely increased.

NEW GREAT WHEEL FOR.—Encouraging reports continue to be received from this mine. No. 2 shaft, now being sunk on the line of the lode, displays wealth quite as abundant as that of shaft No. 1. The whole of these developments of which have been before referred to. The whole of these developments have hitherto, it is said, been wrought out by private enterprise, and the parties interested state that they are well advised as to the character of the ground. They regard this as one of the richest tin districts in the world, and the opening of a splendid lode in such a position may, they add, lead even to greater

practical results than those which have been already obtained in this historic spot. The directors feel they have a magnificent mine, and believe that their property will improve in general favour as it becomes better known. This policy would bring them back to the good old times when mining properties were developed by virtue of their intrinsic worth.

SOUND INVESTMENTS.

GRAND TRUNK RAILWAY OF CANADA.—The events of the past month have been somewhat exciting for those who are interested in this railway, every expedient having been resorted to by adverse speculators to depress its securities. Including the issue of numerous alarming circulars, and attacks upon personal credit, no stone has been left unturned for the accomplishment of the one desired object in view. There is no doubt that the leaders in this aggressive movement have had some grounds to work upon, in the lowering of grain rates from Chicago, and had it not been for the dastardly attempt to assassinate the President of the United States and the consequent disorganisation of the New York markets, the sympathetic fall in Grand Trunk securities would not have been so severe. In the midst of the excitement which prevailed, all favourable features affecting the interests of the company were ignored, and official utterances as opposed to anonymous attacks were of no avail, and thus it was forgotten that instead of the Grand Trunk Railway being the one of all others specially liable to suffer it was really less susceptible to market influences, its securities being only held in England and therefore not dealt in on the New York Exchange, where at one time a semi-panic existed.

We have it on the authority of the President that at this season the rates for carriage of grain are every year liable to fluctuation, a disarrangement which speedily works its own cure. Under such circumstances it is almost incredible that the property should have suffered to such an extent. The debenture stock fell from 117 to 113, the First Preference from 106 to 100, the Second Preference from 98 to 87, the Third Preference from 54 to 41, and the Ordinary from 26½ to 19. The total amount of such depreciation represents no less a sum than 2,362,968*l.*, or more than a quarter of a million sterling in excess of one year's gross receipts.

As this lowering of rates will probably be merely temporary, and as recent traffic returns have indicated but a slight decrease in receipts as compared with the enormous increase of last year, it would appear that there has been no justification for such a serious decline. It is very evident that the selling has been largely overdone, as at the two last settlements heavy fines had to be paid for the loan of stocks on behalf of those who had sold but could not deliver. The market for these securities is unquestionably in a much more healthy condition at the present time, as the continued pressure of recent selling has necessitated the closing of the weak speculative account for the rise. The attack which has been made on this property is perhaps unexampled in the history of public companies, and its originators must have exhausted every means in their power to carry out their object. It is scarcely likely, however, that the proprietors will be alarmed by any such further proceedings, but will be content to await the issue of the half-yearly report and the meeting to be held next month.

MEXICAN RAILWAY.—There can be no doubt that the remarkably steady and continuous development which has taken place in this company's history within the last two or three years has conducted more than anything else to the recent attraction of fresh capital for railway and other enterprises in Mexico. It is evident that this, the pioneer and main trunk line of the country, must be permanently benefited by the establishment of each new railway connection, which practically becomes a feeder to it. The dividend prospects for the half-year ending June 30 last are undoubtedly favourable, and there appears to be every probability that, after meeting all the preference charges, 6 per cent. per annum will be available for the ordinary stock. Such a result would be specially gratifying to me, seeing that the various shares have enormously advanced in value since I first recommended investments in them. Thus, the 20*l.* ordinary shares were then about 17*l.* 10*s.*, equal to 7*l.* 10*s.* for stock now worth 86*l.*; the 1st preference 20*l.* shares were then 4*l.* 5*s.*, equal to 21*l.* 5*s.* for stock now worth 134*l.*; and the 2nd preference 20*l.* shares were about 3*l.*, or 15*l.* for stock now worth 96*l.* All the stocks are now, like the Grand Trunk, firmly held by a very large number of bona fide investors who have every reason to be satisfied with the interest yielded even at present values.

PHILADELPHIA AND READING RAILROAD.—The arrival of Mr. Gowen in this country, and the first signs of activity shown by his successor as President of the company, have caused renewed attention to be directed to Philadelphia and Reading Securities. During the recent "bear" raid on American railway stocks they have suffered less than any on the list, and all indications now point to an improvement in price. The traffic receipts continue excellent, the net results for the seven months of the fiscal year being fully equal to Mr. Gowen's estimates, which were ridiculed in some quarters as far too sanguine. That the satisfactory returns of last year, both of the railroad and coal and iron companies should be so largely exceeded, speaks well for the stability of the trades and manufactures on which the combined undertakings so largely depend, and the rate of increase should be even greater during the approaching busy months of the year. Mr. Gowen's opponents have, it appears, at length mustered courage enough to formulate their own plans for restoring the company to solvency. The scheme in question is not yet published, but it is difficult to imagine any proposal that can effectually supersede the deferred bond issue, under which the proprietors have, without increasing the obligations of the company, supplied all the necessary funds.

NEW YORK, PENNSYLVANIA, AND OHIO.—In sympathy with the depression in American securities, these stocks declined during the past month. A recovery, however, has taken place from the lowest points. I understand that the negotiations for consolidation with neighbouring lines and the extension to Chicago in connection with the Erie Company, are still satisfactorily progressing.

GREAT EASTERN.—This stock has quickly recovered from the recent depression, being quoted at a higher price than before the fall. It is now one of the most popular railway investments. For reasons given in previous Circulars, I anticipate a further steady improvement in value.

ISLE OF MAN RAILWAY.—The interim dividend of June 30 is likely to be at the rate 5 per cent. per annum. The next six months, however, being the more profitable half of the year, will probably yield at least 6 per cent. The dividend for 1881 would thus be 5½ per cent.; and as the present price of the shares is 5½ cum div., or about 110*l.* for stock, the security by comparison with other home railways must be regarded as very attractive, the more especially as it is in a thoroughly unique position, being entirely free from competition of any kind.

CORNWALL MINERALS RAILWAY.—The traffic returns continue to show steady increases, the total for June being 20 per cent. in excess of last year. The board has lately been strengthened by the addition of Mr. R. Tennant, a director of the Great Northern Railway, who, being largely interested in local industries, will, no doubt, render valuable assistance in improving the line. All these stocks are low-priced (the Ordinary, for instance, being at 25*l.* per 100*l.*), and they are worth the attention of those who can afford to "look up" their investments and await an improvement in capital value. The negotiations now proceeding on the part of the Great Western Railway for the purchase of the Cornwall Railway (with which the Cornwall Minerals is connected) on much better terms than were previously offered, shows that railway property in the district is developing.

TRAMWAYS OF GERMANY.—There is every prospect that the dividend for the past half-year will beat the usual rate of 6 per cent. per annum. Since the recent opening of the new lines in Dresden the growth of the traffic receipts has been most remarkable, assuring the payment of much higher dividends in the future. At the present price of 11*l.* (including the half-year's dividend) the yield to an investor on the basis of recent distributions is over 8½ per cent.

LOMBARDY ROAD RAILWAYS.—Before the close of this

month further sections of this system will be opened, from which a large addition to the revenue will be secured. For the next two years, however, interest at the rate of 6 per cent. is guaranteed, and before the end of that period, I am informed upon the best authority, there is every prospect of the company earning from 8 to 10 per cent. These 10*l.* fully paid shares at par, are cheap by comparison with Lombardo Venetian Railway shares at 11½*l.* paying no dividend or the obligations at 11½*l.*, which, deducting the heavy tax, only yield investors 4*l.* 11*s.* 10*d.* per cent.

BORDEAUX TRAMWAYS AND OMNIBUS.—The interim dividend is likely to be at the customary rate of 5 per cent. per annum. In view, however, of the continually increasing earnings the prospects of the whole year, to Dec. 31 next, are highly favourable.

TRAMWAYS AND GENERAL WORKS COMPANY.—The report just issued again showing a dividend of 10 per cent., a reserve fund which now amounts to 16 per cent. of the capital, and a sum carried forward sufficient to have paid a further 2½ per cent. of dividend speaks for itself. This has proved a very good investment to those of my clients who subscribed originally at 5*l.*, and who have received 10 per cent. dividends for four years, and now see their shares quoted at 6*l.* 10*s.* to 7*l.*

ELECTRIC LIGHT AND POWER GENERATOR COMPANY.—The conspicuous success of this company's system of electric lighting as now exhibited in the City of London has been universally acknowledged, and there can be no doubt that as its merits become more generally known the business will be greatly increased. The premises secured adjoining Southwark Bridge are most convenient, commodious, and inexpensive. The shares are well worth buying at current prices.

CANADA COPPER AND SULPHUR COMPANY.—Early next month this company will commence its own smelting operations, by which large savings will be effected. The supply of ore is much increasing. The shares, 4*l.* fully paid, are cheap at the present price of 1*l.* 10*s.*

INDIAN GOLD MINES.—During the past month the shares of these companies were for a time depressed owing to the misinterpretation of the telegrams previously received from the Indian Gold Mines Company (of Glasgow). A recovery took place, however, on its being explained that the 19 tons of stone which only produced an aggregate of 2 ozs. of gold were gathered promiscuously, and were not taken from any of the well-known reefs on the property; and that they were in fact merely for experimental crushing. Later advices received from this and other leading companies are of the most favourable character, and the evidence thereby afforded, considered in conjunction with the valuable testimony of Mr. Samuel Jennings, the secretary of the South Indian and Glenrock Companies, who has just published a very interesting book, entitled "My Visit to the Gold Fields," justifies indulgence in the most sanguine hopes as to the future of these enterprises. Up to the present time every particle of accumulated evidence points to the successful working of these gold mines, and all that is now required to prove the accuracy of the predictions which have been made is the practical test of crushing operations, and this is confidently expected within the last few weeks.

The South Indian Company are now distributing the dividend of 4*s.* per share resulting from the profit on the sale of the portion of their property to the Trevelyan Company, and as current quotations include this payment the shares are additionally attractive. The shares of the Glenrock, Phoenix, and Trevelyan companies are likewise well worth buying, as the latest reports received from the respective properties in India are of the most satisfactory nature.

Shareholders in the Indian Consolidated will be pleased to hear that the whole of the machinery is expected to arrive in Madras next week. Mr. Jennings, in his book above referred to, states with reference to the Balcarres property belonging to this company:—"This is a grand estate. A veritable nugget, of the kind that Australians know all about, was actually picked up while I was there. I have seen quartz from them (the reefs) with visible gold."

JOINT-STOCK BANKS.—With this Circular I publish my usual half-yearly analysis of balance-sheets of the joint-stock banks of London. The figures are very interesting, and the results of the working satisfactory considering the dulness of trade and the consequent low value of money. Investors in these securities have every reason to be well satisfied, as the shares have advanced in value, and they yield an average income of 5½ per cent. on present prices. With the experience now afforded of the success attending the adoption of Limited Liability by the Westminster, County, and City Banks, it is surprising that the Joint-Stock and Union Banks should still remain unlimited. The three banks mentioned have all shown the most conspicuous improvement within the past 18 months since they became limited. The working resources of the ten banks enumerated in the analysis, have increased during that time 6,562,424*l.*, and of this total the Westminster, County, and City Banks represent no less than 5,630,543*l.* Their reserve funds, dividends paid, number of shareholders, and value of shares have also shown the most marked advancement.

— From Mr. WM. ABBOTT'S Circular for August, 16, Tokenhouse Yard, London, E.C.

FOREIGN MINING AND METALLURGY.

At St. Dizier (France) the market maintains a fair amount of animation, order books are well filled, and the demand continues to be sustained. It is evident that great public works which are now on hand exert a very sensible influence upon the trade, and that the present animation in affairs is largely due to this. Welcome rains have fallen in the St. Dizier, but they have not been sufficient to restore activity to all the hydraulic motors. Prices have been very firm. Coke-made iron has brought 7*l.* 12*s.* per ton, and mixed ditto 8*l.* 8*s.* per ton. Plates have made 9*l.* 12*s.* per ton, and axles 8*l.* 8*s.* to 8*l.* 16*s.* per ton. A meeting of foremasters of the Nord has fixed the price of merchants' iron at 7*l.* 4*s.* per ton, showing an advance of 4*s.* per ton, as compared with former rates. Notwithstanding this, Paris quotations for merchants' iron are maintained without change at 7*l.* 12*s.* per ton. The orders at present on hand in the Nord are said to represent more than 100,000 tons of iron. The Orleans Railway Company being in immediate want of 5000 tons of rails has been compelled to pass over the order for these rails to the John Cockerill Company. The German iron trade begins to revive a little. Although the demand for pig has, however, become more active, prices have remained rather low. Iron in bars has been in request in Germany; the same may be said of girders, merchants' iron, &c.

A recent adjudication of rolling stock for the Belgian State railways has excited a certain amount of attention and discussion, some of the orders given out on the occasion having gone to German firms. Prices are still supported with considerable firmness in the Belgian iron trade, but an advance of 4*s.* per ton which was recently announced as official has not yet notably taken place. Business might be done without difficulty in No. 1 at 4*l.* 16*s.* per ton; in No. 2 at 5*l.* 4*s.* per ton; and in No. 3 at 5*l.* 12*s.* per ton. Still there is a general feeling of satisfaction with the orders now in course of execution, and confidence appears to prevail with regard to the future. Plates have been firm at 6*l.* 16*s.* to 7*l.* per ton; in some cases the quotation ranges as high as 7*l.* 4*s.* per ton, but this must be regarded as exceptional. Pig has not yet experienced any advance in Belgium. The Belgian mechanical firms have plenty of work on hand. The Belgian Metallurgical Company has secured some important orders on foreign account for trucks and light railway plant. A Liège firm expects to obtain a rather important order for small arms from the Roumanian Government. If this order is secured it will comprise 28,000 weapons for infantry and 2000 for cavalry.

There is no important item of intelligence to communicate with respect to the Belgian coal trade. The situation has not generally changed, but a rather marked activity is observable in regard to industrial coal of all descriptions, while domestic qualities are almost completely neglected. It is not expected that any advance will be witnessed in Belgian coal quotations for some time to come—at any rate, no advance of importance. The German coal trade appears to have slightly improved during the week. Deliveries of some importance have been made via the Rhine. At the same time, there

deliveries have not been of sufficient importance to exercise any particular influence on prices; indeed the Rhine coal movement this year would appear to have not been so large as in 1880. Deliveries continue to be made to Baltic and North Sea ports, and there is also a large movement of German coal to France as usual. The production of the collieries of the basin of the Sarre amounted in June to 378,052 tons; the deliveries of the month were 379,352 tons. At the close of June the stocks on hand in the basin amounted to 46,038 tons. In Silesia the coal trade has presented rather a weak tone.

GLIMPSES OF THE OLD CORNISH MINERS—No. III.

By JAMES QUICK,

Of the Board of Trade, London, Compiler of a "British Maritime Gazetteer," and author of papers on "Cornish China Clay," the "Cornish Pilchard Fisheries," and on various other subjects connected with Industries of Cornwall, &c., &c.

As most of the veins of tin or copper ore in the West of England run in about an E.N.E. and W.N.W. direction, or in a direction N. of E. and S. of W., a belief common in the 17th and 18th centuries was that Noah's flood, moving from E. to W., had formed in that direction the fissures now occupied by the lodes. Carew, already mentioned, and Pryce, another eminent Cornishman, and who, in 1778, published the *Mineralogia Cornubiensis*, received this opinion as truth. Carew also held the idea that tin grew very rapidly in the earth. He, too, notices as worthy of serious attention the fact that the locality of metals in the earth was sometimes detected by dreams; whilst Pryce is puzzled at mines being originated in Cornwall by the tinners' children playing and imitating their fathers. Yet the success of such means of discovery should have seemed extremely probable when the overflowing abundance of metal in the two counties in the days those authors wrote is taken into account. Indeed, Pryce states that mines were commenced by metal being laid bare through wheel-ruts in roads! Dr. Borlase, in 1758, in his *Natural History of Cornwall*, combats an idea that mountains or mountainous districts were in some way necessary to the production of metals. Many persons also in the West of England used to affirm that no dew ever rested on land under which were metals, and some professed to discover metallic veins by the manner in which streams or vapours arose from the earth. Others asserted that flashes of fire could at times be seen ascending or descending over land containing metal, these supposed indications being known in Cornwall as "fiery dragons," but I have never been able to find any book whose author proved such assertions to be well founded. Borlase also notices the belief that the course of the lode could be distinguished by the unequal growth of the grass above it; and the harsh, disagreeable taste of waters issuing from the earth, Pryce states, has often led to the discovery of metal.

But the most remarkable of the miners' absurd beliefs was their ardent faith in the powers of the Virgula Divinatoria, or Divining Rod, for determining the position of metals, and whose mention may serve now to remind our readers of their childhood's tales of fairy wands and of the frequent references to the rod in works of romance, especially in the novels of Sir Walter Scott. Pryce claims the rod to have been introduced into England by his friend, William Cookworthy, the founder of the Cornish china-clay trade and of the Plymouth potteries, but it would appear to have been used in England at a much earlier period, and was probably brought over to this country in the reign of Elizabeth by the Germans, already noticed. Sir John Pettus (in his *Fodinae Regales*, 1670), who describes the Germans being invited to England, speaks of the rod, and expresses a doubt as to its powers. No allusion to the rod has yet been traced in any work earlier than that of Sir John Pettus, not even in Carew's exhaustive Survey of Cornwall, and Sir John's doubts are in our opinion an evidence that it could not in his time have been long known in this country, for when its use had become established here—a century later, for example—no one thought for one moment of calling its powers into question, and it was reserved for the light of recent science to prove its inutilty (15). Borlase, however, in 1758, states that few Cornishmen were then acquainted with the Virgula, although 20 years later, according to Pryce, the rod was in very general use. Possibly Cookworthy, although not the first to bring the rod into notice in Cornwall, may have been instrumental in extending its recognition. But the rod had long prior even to the 17th century been in use in Germany, and it is hardly likely that the German miners on coming to this country could have left it behind them. In German folk-lore, too, will be found a remarkable number of tales—some of them undoubtedly very ancient—concerning rods which would define the locality of treasure or would otherwise benefit their possessors. No other country, indeed, appears to have a greater number of traditions connected with rods. And I will ask my readers to excuse me for introducing as a specimen of such German tales a story I have discovered in a paper called the *Weekly Entertainer*, and published in 1795 (15A). The story tells that as some German musicians were crossing the Kyffhaus mountain in the Hartz, the mountain was seen to be open, and the inside glittered with diamonds and metals. A king, who proved to be enthusiastically fond of music, sat on his throne and was attended by hosts of dwarfs, some of whom invited the musicians to enter the gorgeous vaults. After going in and playing before the king the musicians were conducted out by the dwarfs, and on parting were each presented with a green bough. Upon getting out of sight of the mountain all save one being dissatisfied with their remuneration threw away their boughs, but he who retained his rod until he entered his own home found that then it suddenly budded into golden blossoms, which, of course, made his fortune for life. Surely such a tale as this contains some idea of the divining rod, and sets forth that he who perseveres with the use of the rod will ultimately discover unknown treasure.

It is an example of the occasionally strange obtuseness of the human mind that the rod, in face of the proofs adduced by science of its uselessness, is held to possess some virtue for divination even by many persons now living. The rod would appear to have been formerly in use in several parts of England, but nowhere did it obtain such general recognition as among the miners of Cornwall and Devonshire, by whom towards the close of the 18th century it was the most frequent method adopted for discovering metallic veins, and who, indeed, would seem to have regarded it as possessing equal powers for detecting hidden metal with those of an Ithuriel spear for revealing sin.

The rod consisted of a forked or two-pronged branch, usually from one and a half to two feet long, cut from a hazel-tree or blackthorn bush of one year's growth. In using it the seeker had to hold the end of one prong in the right hand and that of the other in the left, keeping the rod at right angles to the holder's body. With the arms rigidly extended the rod had then to be turned slowly upward and round to a horizontal position, pointing to the seeker's breast, on attaining which the rod, owing to the muscles of the arms usually becoming somewhat relaxed, was generally jerked downward suddenly. This last movement was believed to be caused by the attraction of the metals in the earth for the rod, and Pryce, who devotes several pages of his work to directions for using the virgula, was of opinion that if either of the feet of the seeker was put forward between the metal and the rod the latter would be repulsed towards the seeker's face! Pryce, too, believed that virtue resided in all rods made from any kind of tree, and that they could be used with satisfaction by all persons. But he especially recommended the branches of the hazel-tree cut in winter and kept till they were dry, assigning also as a condition of success that anyone using the rod must have faith as to its efficacy or hold no opinion about the matter at all, there being in unbelievers a mysterious animal force which worked repellantly on the rod and prevented its action! And, as if to crown the absurdity of superstition clinging around the virgula, it was also held that if a rod were put under a person's arm, or if the least animal thread

such as that of silk or worsted or hair were tied round the rod, its affinity for metal would be totally destroyed; but that if a thread were tied round the rod, and the latter then placed under the arm, the affinity would be restored! Some people believed, too, that there were "unlucky hours," governed by particular planets and constellations, in which the rod would not work. It used also to be affirmed that the hazel-rod should be cut before sunrise, and especially when the moon was increasing, and, above all other times, about the day of the annunciation of the Virgin Mary—this last notion probably having been brought from the Continent with the use of the rod (16). But our readers are doubtless satiated with the mass of nonsensical notions here described, and as volumes could be written on the queer beliefs connected with the virgula, we proceed to look at the Cornish miners from another aspect.

Owing to the formerly great powers of the Crown over the mining interest, and the oppressive royal usage of "farming," or selling, or bestowing on some Court favourite the right of pre-emption, or of buying the tin in preference to anybody else, and at the pre-emptor's own price; to the duties exacted by the Duchy of Cornwall; and to the "cunning devices," mentioned by Carew, of the London merchants, who in the middle ages were the chief buyers of the tin, the miners could but rarely make large profits from their work. The condition of the bulk of Cornish tinners in medieval times, and for two or three centuries later, may be described generally as one of mere starvation. Carew (17) quaintly describes the stories told by the London merchants and the miners to deceive one another, and from him we learn that the merchants would frequently lend money to the miner on condition of receiving at a certain date an amount of tin far, of course, in excess of the value of the loan. The reign of Elizabeth, as we have already shown, was one of considerable improvement and reform in English mining. The commercial enterprise of that Queen appears to have been markedly exerted for the benefit of the poor tinners, even, perhaps, if it at the same time served to replenish the Royal Exchequer. In a long letter, dated May 31, 1599 (18), from Elizabeth to Sir Walter Raleigh, as Lord Warden of the Stannaries, such an insight is given of the state of Cornish mining affairs that we think proper to present to our readers the following extract:—

You have divers times represented their grievances and inconveniences at being sued in other Courts contrary to ancient customs. You are to declare to them that we have ordered the lord keeper and the judges to take care that no hard measure be offered them. Of late years the merchants and dealers in tin have used the poor tinners hardly by driving them to borrow money on deep interest and under great forfeitures (the same state of matters that is noticed by Carew). We have resolved, therefore, by virtue of the prerogative reserved to us in the tinners' charters, to take into our own hands as much tin of Cornwall as has usually been exported, and sell it, but giving better conditions to the poor tinners. You are to call together six tinners out of the four Courts, and let them know that the merchants, a year or two ago, crossed our purpose to establish reasonable payments for tin by craftily raising the prices for two years, intending to extort bargains after at their own pleasure, and thus make prices rise and fall at pleasure, whereby the tinners will suffer extreme loss.

EXTRACTING GOLD FROM ITS ORES.

An improved process and machinery for separating gold from auriferous deposits has been invented by Mr. OZIAS BAILEY, of Whitecloud, Kansas. He employs a tank, which is kept nearly full of water, and a long box made of iron or other suitable material having a curved bottom composed of grating covered with screen wire. The screen thereby formed is composed of sections of different degrees of fineness, the finest being at the bottom where the earth is thrown in, and the coarsest at the upper end, each upper section being coarser than that next below. This box when in position is at an angle of about 15° to a horizontal plane, and is located within the tank. An axle or shaft, having its bearings in the ends of the said box and arranged parallel to its bottom, projects through the lower end of the box and carries a sprocket wheel, by means of which it is rotated. The said shaft is provided from end to end with a single row of stirrers or blades set at short intervals apart in the form of a screw; these stirrers carry the tailings or refuse to the upper end of the box, whence they are discharged, the finer earth and precious metals falling through the screen into the bottom of the tank. These grinders or stirrers are bevelled in such a manner that they tend to assist the screw to carry the dirt up, and to more thoroughly mix and grind the same, and there are set in the said shaft as many straight grinders as may be required and in positions not interfering with the action of the screw-grinder.

Longitudinally in the bottom of the tank there is arranged a screw conveyor for the purpose of conveying its contents which consist of auriferous earth of the consistency of slush, to an elevator working at its lower end in a well, into which the slush is discharged by the screw conveyor. This elevator extends vertically upward a sufficient distance to empty its contents into a chute which conducts the slush into an upright or vertical tank, having attached to its opposite sides a series of amalgam plates arranged on an incline and forming a zig-zag passage from top to bottom of said tank. At the bottom of this tank is a well, provided with a series of pockets filled with mercury or quicksilver, which will arrest any coarse or shot gold that may pass down over the amalgamated plates. From the said tank the slush passes through an outlet above the quicksilver pockets into a horizontal tank also provided with amalgam plates. A valve or stop-cock is arranged at the lower end of the vertical tank so that it may be adjusted in such a manner as to govern the outflow from the same into the horizontal tank and thus at will regulate the quantity of liquid slush within the said vertical tank. The passage-way for the slush through the horizontal tank is V-shaped in cross-section, and is in the form of zig-zag from side to side. The walls of this zig-zag or angular passage may also be covered with amalgamated plates from end to end, and the bottom of the tank is provided with pockets, as above stated, for the reception of quicksilver, so that any gold passing through this chamber cannot fail to be arrested. The vertical and horizontal tanks may be used together or separately as desired. To facilitate the washing, and perfect the separation of the auriferous from the earthy particles atmospheric pressure is applied in the tanks with a view to agitating the slush.

PREVENTING OXIDATION OF METALS.—An improved preparation of oil for coating metals to prevent their oxidation has been invented by Messrs. BOURDET and PRADOU, of Paris. They three parts fill an earthenware vessel and add granulated lead or lead filings of about equal weight to the oil. This mixture is allowed to stand for about nine days. The mass becomes thickened or turbid as the lead is attacked or partly dissolved by the olive oil; the thickened or turbid mixture which is formed during the nine days will precipitate in 24 hours after it has been drawn off or decanted, and the oil will become clear and be freed from its oxidising qualities or principles. Metals of all kinds may be coated or covered with the product so obtained either in a bath, or by means of a brush, or otherwise, and when dry the said preparation or product will form upon the surface of the metal a fatty preserving layer or coating, which will protect the metal against oxidation. Articles so coated may be exposed to rain or moisture without injury. The metal may for its better protection be coated with several layers of this preparation, or it may be subjected to a succession of baths for the same purpose. The proportion of lead, as well as the time during which the olive oil has to remain in contact with the lead, may be somewhat varied in practice.

MANUFACTURE OF ARTIFICIAL FUEL.—The use of heated compressed air in lieu of steam for agglomerating the materials is proposed by Mr. J. R. Leaver, of Swansea. By means of an air pump or blower, or by other convenient means, the air to be employed is caused to pass through a series of heated pipes or other suitable heating apparatus, and when sufficient heated is passed into the pug or mixing receptacle through one or more apertures, whereby the mixture is heated and is kept light and easily moved by the knives or mixers during the operation. According to the ordinary method steam is employed, which is passed through a superheater and thence into the pug mill, the effect of the steam being by its heat to melt the pitch used in the composition of the fuel and by its force to lighten the mass. The steam, however, partially condenses in the mixture, and some steam remains, notwithstanding that a blower is used to release it and draw off as much as possible; the soundness of the brick or block is thus impaired, as on

the hand the presence of the water and steam in the mass while it is contained in the mould impedes the agglomeration, and on the other hand the steam expands as soon as the brick or block is ejected from the mould, thereby causing cracks and fissures in its surfaces. By the use, however, of heated compressed air in this manner the advantages of steam are secured without the disadvantage due to the detention of steam and the presence of water of condensation in the brick or block, the result being that the different ingredients are properly agglomerated and a sound solid brick or block is obtained.

MARBELLA IRON ORE COMPANY.

The report of the directors prepared for presentation at the forthcoming meeting, states that the output for the period reported on amounts to 30,000 tons, which is 10,000 tons less than the directors had expected, their calculations having been upset by the almost unprecedented heavy rains which visited the South of Spain during the first four months of this year. Since May, however, the output has been on the increase, and the reports from the mines warrant the directors in anticipating a considerable improvement in this respect during the remainder of the year. The demand for Marbella ore has been good, and the price obtained during the period under review shows a fair margin of profit, although the average has been somewhat reduced by low-priced contracts entered into last year. These contracts, however, have now been worked off, and fresh orders have been booked which will absorb the greater portion of the remainder of the estimated production of 1881.

An exceptionally large amount has been expended on repairs to the railway (partly owing to damage done by the floods previously mentioned), and it has also been necessary to replace at a cost of about 750*l.* some of the timber-work of our loading pier; but although these repairs, amounting in all to 1869*l.* 9*s.* 11*d.*, have been debited to revenue, the cost of the ore sold, at Marbella, is not higher than it was last year. The transactions during the last year have resulted in a profit of 7077*l.* 11*s.* 8*d.* from which, however, falls to be deducted 1875*l.* 15*s.* 6*d.* being balance of losses incurred during 1878 and 1879, which still remains a debit of revenue on June 30 was 5401*l.* 15*s.* 2*d.* The directors anticipate that they will be able at the end of the year to show a satisfactory statement of affairs, but looking at the fact that no sum has ever been written off for depreciation, and that the auditors at year by year so strongly alluded to the necessity of this being done, they cannot recommend that any interim dividend be declared.

WHEEL AGAR.—At the meeting on July 28 (Mr. H. Waddington in the chair) the accounts showed a loss on the four months' working of 40*l.* 15*s.* 10*d.*, and a total debit balance of 90*l.* 0*s.* 7*d.* Capt. W. Hambly and R. Daniel, after reporting on the various points of operation, say—We have erected a pulveriser, which is doing its work moderately well, reducing about 5 tons per day of burnt laving. An additional 16 heads, axes, and 2 boulders have been added to the dressing floors, from which we shall in due course have augmented returns. It will be seen from this that the mine continues to open out most satisfactorily. By the alteration from small to larger pitwork we anticipate no further delays, and greatly increased returns.—The labour costs were all charged up to July 2. The Chairman remarked that according to Capt. Hambly's estimate the ground opened since the last meeting, taking the average price at 5*s.* per ton, was worth 25,000*l.*; but that would have been nothing compared to what they would have done provided it had not been for what they might after all consider a fortunate circumstance, the water having gone from the 150 to the bottom, as it had been the cause of opening up the ground more rapidly. He had no doubt they would be able to get away to the eastern part of their ground, and believed it was the opinion of most men that that was one of the finest pieces of mineral ground that there was to be found in the world, so they need not be envious of their neighbours. They were gradually increasing the means of returning their stuff, and he did not see any reason why they should not make a good profit in future. The mine was worked as economically as possible, and there was no reason why they should not return their tin as cheaply as any mine in the county. He was very happy they had met under such favourable circumstances, and he hoped when next they met they would have the pleasure of declaring a dividend.

HUNTINGTON COPPER AND SULPHUR COMPANY.—The tenth meeting of shareholders was held in Glasgow on Wednesday. In their report the directors expressed regret that the statements of accounts for the present year was not so satisfactory as they could have wished. The mines had not yielded the quantity of ore expected, chiefly on account of a serious accident in the Huntington Mine involving loss of life, destruction of plant, and considerable delay. Although the quality of the copper had given the utmost satisfaction to consumers in Canada, the directors anticipated the time when the Canadian market would be unable to absorb the whole of the company's production, and had had samples taken in this country with the most favourable results. The Chairman stated that the mine had now been sunk to a level of 82 fms., and the ore found at that depth was richer than in other parts of the mine, giving 10 tons of 7 per cent. ore per fathom. It was agreed to vote 250*l.* to the directors, the allowance to be continued till further arrangements.

WHEEL PRUSSIA.—At the meeting on Wednesday (Mr. R. S. Teague in the chair) the accounts showed a loss on the 16 weeks' working of 2005*l.* 8*s.* 10*d.*, and a total debit balance of 2029*l.* 7*s.* 9*d.* The Chairman remarked that no steps had been taken in that mine under the Employers' Liability Act.—In reply to Mr. Bain, Mr. J. Pryor, the purser of Wheel Peavor and other mines in the neighbourhood, said they had adopted at Wheel Peavor the same principle as at the mines in the Cornbarne district.—Mr. W. Pike stated that the best plan he had seen so far was that adopted by Mr. Dabur, at West Basset, who had a small form of pitwork, which every man had to sign.—Mr. S. Abbott said there seemed to be a certain amount of doubt whether as adventurers they were legally allowed to get the men to contract themselves out of the Act.—Mr. F. Harvey (of the firm of Harvey and Co., Hayle) stated that his firm had determined not to take any action under the Act, but to endeavour to conduct the works in a manner that they would have as few accidents as possible.—Mr. John Hocking observed that at West Basset the mine subscribed an equal amount to that subscribed by the miners, and no question was put in the mind of the shareholders as to whether it was owing to his neglect or not.—After some further discussion, it was resolved that a committee, consisting of the Purser, Messrs. D. W. Bain, T. Pryor, and John Hocking, be appointed to arrange with an Assurance Company to relieve the mine from the risks of the Employers' Liability Act, it being deemed desirable by them.—A vote of thanks to the Chairman concluded the meeting.

From Mr. JOHN B. REYNOLDS:—We have again to report a steady and firm market for mining shares. A good demand has existed for Dolcoaths at an advance, whilst Carn Breas, East Pools, South Frances, West Kitty, Wheel Agar, West Polbreen, West Polbreen, and New Kitty have been in favour. The principal business appears to have been done in the St. Agnes Mines in Cornwall. It is evident that the impression produced at the West Kitty and West Polbreen meetings is resulting in attention being more than directed to the mines in the St. Agnes district. Indeed the demand for West Kitty cannot be met to anything like an appreciable extent, and if there was the slightest disposition on the part of the large holders to put these shares up they might be made to stand at each without many changing hands. The dealers seem to complain at this state of matters, but as far as we can see they have no ground for complaint. For a considerable period West Kitty shares were very low and plentiful, and it reflects but little credit on the judgment of the dealers to find themselves now out of the stock, nor can the shareholders be expected to sell at a price which is obviously worth double the money. We have no wish to push this mine prominently forward, but we think it is a cause for congratulation that the prospects are so good. West Polbreen shares have also been in increased demand, and have been easily obtainable. It is well known that these shares must have a considerable rise, and here again there is no disposition to unduly influence the market. As was the case in West Kitty so here: ample time is given for buyers to come forward. New Kittys are changing hands, and the market is evidently being watched. The remarks I have made on former occasions as to the property should be borne in mind by "one and all." Wheel Agar promises good things in the not far distant future, and my prediction that this is to be one of the prizes of the year is near its fulfilment already. The shares have had a good rise and are appreciated. This illustration again should warn investors against neglecting shares in splendid districts simply because they are not sought after. It is a fact that there are many low priced shares at the present moment which before the close of the year are likely to have a considerable rise, probably more than cent. per cent. I refer, of course, to companies of established reputation, and where good management and safety for proprietors have been secured. There are mines and mines, and whilst not reflecting on any, nor trying in the slightest degree to put one forward at the expense of another, the eyes of the capitalist ought only to rest on those the management of which is known to be first rate, and the locality of which is not open to doubt as to merit. We have made all diligent enquiry, but we have not been able to get out a single instance in which there has been a failure on the Wheel Kitty, St. Agnes lode. It has been a matter of observation that Wheel Kitty shares are said to be a deep mine yet, as compared with some of the leading mines, it is not so deep, and there are those who are of opinion that the mine is not so deep as it is said to be. There has also been a little talk about Wheel Coates, but shareholders there should remember that levels ought to be driven with all possible dispatch, and cross-cut put out, and less attention paid to immediate returns. The salvation of West Kitty lies in the fact of the manager having had plenty of money to lay out the mine without any reference to the reserves, and there is no desire at present to vary this policy on the part of the large shareholders. We cannot help thinking that there are other mines in the splendid district of St. Agnes where the example of West Kitty proprietors should be followed, if the district is to resume its old notoriety. There is a great deal of unsound argument in favour of bringing a mine quickly into a paying state. For our part it is a real pleasure to pay a call if as the result of such payment there is a probability of a very large return.

N.B.—LATEST FROM WEST POLBREEN.—The cross-cut going out to West Kitty and West Kitty rich lode is looking more favourable as the advance. See Agent's report in to day's Journal. West Kitty even by manager's moderate report looks better than at any former period. The returns from this mine are convincing the most ignorant.

RICHMOND CONSOLIDATED.—The directors have declared a dividend of 10*s.* per share free of income-tax, payable on the 9th inst.

15.—For proofs of this see Ure's Dictionary of Arts, Manufactures, and Mines, edited by Robert Hunt, Esq., F.R.S.

15A.—The *Weekly Entertainer* was an interesting periodical, published at Sherborne from 1784 to 1815.

16.—Much of the information here given has been taken from a little work entitled, *Some account of the mines, and the uses of them to the Kingdom*, London: 1797.

17.—See his *Survey of Cornwall*, 1320.

18.—Given in *Calendar of State Papers*, 1532–1591, published under the direction of the Master of the Rolls.

Registration of New Companies.

The following joint stock companies have been duly registered:—

GENERAL SANITARY REFORM COMPANY (Limited).—Capital £10,000, in shares of 10s. To manufacture, use, sell, or let apparatus, and generally to carry on the business of a sanitary company. The subscribers (who take 10 shares each) are—H. A. Hervey, Muckross; J. Tatham, 12, George-street; W. J. Denton, Kew; J. Merritt, Old-road; J. T. Ashby, Sutton; C. Forge, Walton; J. Forge, 148, Mile End-road.

MASKELYNE CHECKING APPARATUS COMPANY (Limited).—Capital £50,000, in shares of 10s. To make, use, and deal in a patented apparatus for issuing tickets. The subscribers (who take one share each) are—L. Stanislas, 187, Upper Thames-street; J. Burbridge, 62, Moorgate-street; E. Gilbert, 1, St. Lawrence-road; G. P. Brown, Hammersmith; W. D. Childs, Peckham Rye; A. H. Morrison, 70, Kennington-road; B. C. Sharland, Dalston.

THE BRYN DYPI LEAD MINING COMPANY LIMITED.—Capital £10,000, in shares of 10s. The purchasing or otherwise acquiring and working mines, minerals, and mining rights, lands, and chattels in Wales, and in particular the requisition of a lease of the land, minerals and mining rights situate in the parish of Llanfihangel Gaeuergwyn, Cardiganshire, which lands comprise some 290 acres. To acquire any other mineral properties for the purpose of working, developing, or otherwise disposing of same. The subscriber (who take one share each) are W. H. Wilson, Liverpool, oil merchant; J. le Doux, Liverpool, merchant; D. C. Davies, Gobowen, M.E.; J. C. Johnson, Liverpool, merchant; E. W. West, Liverpool, merchant; J. Guyton, Seacombe, gent. The number of directors must not be less than three or more than five.

THE SYDNEY AND LYDBROOK STEEL AND TIN-PLATE COMPANY (Limited).—Capital 200,000, in shares of 5s. To acquire certain iron and tin-plate works in the Forest of Dean, working and carrying on such works. The subscribers are—R. Thomas, Lydbrook, 100; J. Fellows, West Bromwich, 100; W. Partridge, Lydbrook, 100; R. H. Eden, Malmesbury, 100; P. J. Rouquette, 35, Finsbury Circus, 100; J. Raine, Springfield, 100; C. Wright, 3, Copthall Buildings, 1.

ASHBY-DE-LA-ZOUCH GAS COMPANY (Limited).—Capital 13,840, in shares of 10s. To manufacture, supply, and sell gas in that town and district. The subscribers (who take one share each) are—W. Wright, Ashby; T. Dunciff, Ashby; J. Dalby, Ashby; E. Ison, Ashby; J. Germain, Ashby; J. Ison, Ashby; T. W. Davenport, Ashby.

ALLIANCE GOLD PROSPECTING ASSOCIATION (Limited).—Capital 40,000, in shares of 10s. To purchase or otherwise acquire certain lands situate in Surinam (Dutch Guyana), known as the Alliance Placer, with the mining rights therein, and to hold and work said lands for gold, precious stones, and other minerals, and generally to carry on all operations connected with gold mining. The subscribers are—Sir T. S. Tancred, 2, Westminster Chambers, contractor, 2500; T. Bolton, 19, Grosvenor Gardens, Lieut.-Colonel, 3000; T. R. Thompson, junior, Carlton, Bart., 500; H. B. V. Hall, Sarblinton, Lieut.-Colonel, 2000; Baron Oubert, 23, Ryder-street, 200; J. R. Francis, Swansea, J.P., 1000; R. L. Holland, 3, Howick Place, 500. The subscribers shall determine the names of the first directors, the qualification being fixed at 500 shares.

THE UNITED KINGDOM FISHERIES (Limited).—Capital 200,000, in shares of 10s. To carry on the trades of trawlers, fish carriers and curers, salesmen, dealers in fish, factors, and agents. The subscribers (who take five shares each) are—S. Hewett, 110, Lower Thames-street; G. W. Hutchinson, 2, Great Winchester-street; A. Clark, 33, Union-square; F. E. Mardon, Brixton; J. S. Tomkins, 5, Friar-street; E. J. Turner, 9, Westbourne Park; J. Tomlin, 10, Broadway.

THE CONTINENTAL OIL COMPANY (Limited).—Capital 40,000, in shares of 10s. To carry on the business of a petroleum company in connection with properties situate at Oelheim, Steinförde, and Hornsdorf, Hanover. The subscribers (who take one share each) are—Baron de Drubeck, 25, Ryder-street; H. A. Herbert, Muckross; Sir T. S. Tancred, 2, Westminster Chambers; J. S. Bergheim, 18, Laurence Pountney-hill; B. G. Lake, 10, New-square; G. E. Lake, 10, New-square; W. H. McGarvey, 18, Laurence Pountney-hill.

THE BAGILLT SPELTER COMPANY (Limited).—Capital 10,000, in shares of 5s., to acquire the plant, stock, &c., of a smelting company in Flint, and to continue the business. The subscribers (who take one share each) are—A. Ward, Hawarden; E. F. K. Fortescue, Alveston; J. H. Thornton, 44, Finsbury Pavement; D. A. Jardine, Bathmines; J. Macsheery, 30, Gardiner's Place; W. A. Hills, Chester; J. Green, Hawarden; G. F. Ward, Chester.

TRAMWAYS AND LIGHT RAILWAY CONSTRUCTION COMPANY (Limited).—Capital 100,000, in shares of 10s. Constructing, working, maintaining, selling, and dealing with tramways and light railways. The subscribers are—E. J. Halsey, 77, Cornhill, 50; G. Haynes, Hampstead, 60; F. A. Davenport, Walton, 50; A. E. Guest, 3, Saville-row, 50; H. W. Campbell, 44, Charles-street, 50; A. R. Ricardo, Stock Exchange, 10; A. Hudson, 28, Austin Friars, 25.

THE PHOENIX STEAM-BOILER COMPANY (Limited).—Capital 10,000, in shares of 5s. To acquire, take over, and work the Phoenix Boiler Works, situate at Bolton, Lancashire. The subscribers (who take one share each) are—J. Knowles, Little Bolton; T. Glaston, Bolton; T. M. Hewitt, Heaton; R. Hough, Great Lever; J. F. Knowles, Little Bolton; P. Kevan, Bolton; J. Ounrod, jun., Heaton.

THE AMMONIATED SUPER-PHOSPHATE COMPANY (Limited).—Capital 120,000, in shares of 10s. To manufacture and sell artificial manures in connection with certain acquired patents. The subscribers (who take one share each) are—L. Bayfan, 61, Onslow-square; J. A. Wanklyn, 7, Westminster Chambers; T. Bolton, 19, Grosvenor Gardens; B. Baker, Queen Square-place; T. Bedwood, 17, Bloomsbury-square; F. W. Hartley, Wandsworth; D. Urquhart, 10, Cheltenham Terrace.

THE METAL MARKETS AND EXCHANGE COMPANY (Limited).—Capital 10,000, in shares of 20s. The subscribers (who take one share each) are—J. P. Campbell, 96, Great St. Helen's A. R. James, Gresham House; K. H. James, 10, Austin Friars; G. Richardson, 3, Lombard-court; P. W. Spener, 17, Gracechurch-street; A. G. H. Strauss, 16, Rood-lane; R. Zuns, 118, Leadenhall-street.

THE ASSAM RAILWAYS AND TRADING COMPANY (Limited).—Capital 398,750, in shares of 10s. and 1s. To construct, equip, and maintain railways, and also carry on the business of a trading company. The subscribers (who take one share each) are—E. A. Jack, 80, Bishopsgate-street; B. Piercy, 8, Drapers' Gardens; J. B. White, 3, Pall Mall; J. J. Ridley, 8, Drapers' Gardens; J. W. Whitham, 8, Drapers' Gardens; W. T. Johns, 9, Haroldstone-road; H. Dixon, Finchley.

THE RIVER PLATE TRUST, LOAN, AND AGENCY COMPANY (Limited).—Capital 1,250,000, in shares of 10s. and 5s. To carry on a financial and general agency in connection with South America. The subscribers (who take one share each) are—J. E. Gorst, Temple; S. Herbert, 10, Maudeville-place; F. G. W. Fearon, 84, Park-street; C. Cox, 14, King's Arms-yard; E. Ashworth, Manchester; E. Griggs, Finchley; J. Taylor, 1, Clanricarde Gardens.

NEW GREAT WHEAL FORTUNE AND POLCREBO MINES (Limited).—Capital 50,000, in shares of 10s. To adopt and carry into effect an agreement made between H. T. Cox, of the one part, and J. Alexander, on behalf of the company. The acquisition by purchase or otherwise of any lands or mines besides those mentioned in said agreement (which has not been registered), and to work all or any of the pieces of mineral ground or mines so acquired, or that may hereafter come into possession of the company, and to carry on the business of mining in all branches. The subscribers (who take 50 shares each) are—G. Pidding, Dalston, architect; W. Walmesley, Gravesend, secretary; J. E. Nurse, 8, Ampton-place, clerk; S. J. Martin, 9, Ellington-street, clerk; C. H. Fitzmaurice, Shepperton, esq.; J. S. Page, 8, Craig's-court, clerk; L. Lawson, Lower Clapton, clerk. A director must qualify in 200 shares; the board not to consist of more than seven or less than three members.

SIR TITUS SALT, BART., SONS, AND COMPANY (Limited).—Capital 750,000, in shares of 500s. and 100s. To acquire and carry on an established business at Saltaire, near Bradford, of wool merchants,

wool combers, worsted spinners, &c. The subscribers (who take one share each) are—William Salt, Loughborough; Herbert Salt, Skipton; E. Salt, Baildon; Q. M. Salt, Bingley; C. Stead, Baildon; W. Stead, Saltaire; C. F. Stead, Baildon.

THE ALBANIA COAL, IRON, LAND, AND COLONISATION COMPANY.—Capital 126,000, in shares of 10s. and 1s. To acquire land, mines, mining rights, and other property in the State of Albania and to develop the same. The subscribers are—A. B. Abraham, Upper Norwood, 10; C. Iniff, 22, Lowndes-square, 10; E. Riley, 2, City-road, 10; G. W. Medley, 7, Copthall-court, 10; E. Cox, 43, Lothbury, 1; R. V. Tomlinson, 43, Lothbury, 10; C. C. Bowley, 43, Lothbury, 10.

THE HOMER MINING COMPANY (Limited).—Capital, 150,000, in shares of 10s. To adopt and carry out the provisions of a contract between J. S. Luty on the one part, and P. H. Bailly as a trustee, for acquiring the interests in certain mineral and agricultural properties and estates situate in California. To work, develop, and maintain these, and deal in, purchase, sell, or otherwise dispose of ore, minerals, goods, and merchandise generally. The subscribers (who take one share each) are—J. L. Luty, Shepherd's Bush, merchant; C. R. Mandard, Norris-street, Capt. R.N.; P. H. Bailly, 10, College-terrace, accountant; C. L. Marcuard, Bagshot, accountant; E. P. Dunne, Stoke Newington, secretary; G. D. Cardew, 115, Cannon-street, merchant; A. H. Bailey jun., 3, Royal Exchange Buildings, printer.

THE ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

MINA GRANDE.—N. C. Moreau, May 16: The slope in back of the 17 is of a productive nature. The 15, driving north, is suspended, and the men put to stop the back, where there is some good stones of black ore. The lode in the winze sinking below the 15 has a better appearance than it had a short time since; if the felspar does not make in a strong body there is hope of the lode making down. The big slope in back of the 12 is still of its usual productive character. Productive ore ground is still being laid open in the rise above tunnel at the new west cross-cut.

SAN JUAN.—The side of the cross-cut is being taken down to make room to sink on the little petanque in sight.

GUJAS CROSS-CUT.—A fine channel of ground has been met with, and good progress is being made. Last week's drive, 12 ft.; total length, 39 ft.

PRIMERA VETA (FIRST LOPE).—For some time past this lode has been of a more promising character than usual; there are four men stoping the back. Shortly we shall commence to drive on the course of the lode north-west, where it is regular and well defined; it is possible this lode may have a better future before it. By all means a considerable length should be driven on this branch, and a faithful trial made.

MINA GRANDE.—J. H. Climes, May 30: The slope in back of north-east drift 15 is impoverished, and is stopped. If the ore vein continues in the 17 these workings will be communicated.

SAN JUAN.—The side slope at San Juan was to make room for a winze to follow the stringers of petanque that exist there. The 54 N. Tirito being started to-day, this winze will not be sunk for the present; unless the petanque increases in quantity this winze will not be remunerative.

THE 15 WINZE.—67 ft. were sunk in the fortnight; price \$20; it improved during the last week, the bottom now showing 1½ foot of milling ore; total sink, 12-1-10 feet.

In the rise 35-10 ft. were run; price \$18 and \$19; total, 20-2-10 ft.; ore in breast, 1½ ft. This rise is stopped. We have set a contract to sink a winze at its foot to communicate with the main stop; as soon as this can be done we shall continue the rise. The communication will greatly improve the ventilation, and enable us to rise more cheaply. With good ventilation there is nothing in the ground of the rise to make us pay such a price as \$18 to \$19.

At the Gujás cross-cut 7-9 ft. were driven; total, 46-9-10; the ground is hard. Slopes.—June 11: 6-4 ft. linal at 17; 21-0 ft. ditto at 12; 27-4 ft. ditto at Primera Veta; 6-9 ft. ditto at 15, south of new winze. A lessened force was employed in stoping, the breaking floors being crowded with ore. The men removed from the stopes were employed in explorations.

At Primera Veta we have a chute of green ore, 30 ft. long by 3 ft. wide, with ore still in the breast; the lode is well defined.

MINA GRANDE.—The slope south of winze in 15 shows 2 ft. of black ore; we are hoping that the ore may be found back south; this could easily happen if the ore body has a south dip longitudinally.

54 DRIFT NORTH.—Tirito.—The breast was advanced 14 ft., the ground being favourable; present price \$10 per foot. A good deal of water oozes from the breast, which shows spots of green ore.

GUJAS CROSS-CUT.—The ground is hard; only 4 ft. 9 in. were driven; price \$14. Distance from mouth, 51-2 ft. A narrow stringer—say, 2 in.—of greenish ore running diagonally across the drift was traversed. A small hand specimen assayed 25 ozs. per ton.

The 15 winze only ran one week, 2-1 ft. being sunk. The present bottom is poor, the ore occurring in the south side. Sinking has been resumed.

At the 15 and 17 drifts 4-3 and 4-4 ft. were driven respectively. The upraise on W. branch is temporarily stopped; 8 ft. were sunk in the winze under this raise, the intention being to communicate with the main stopes and improve the ventilation in the rise so as to continue it.

June 25: Rise and Stopes.—14-9 at main ore chamber, 12 back; 5 at Primera Veta. This being the week of the San Juan feast we had scarcely any labourers.

The slope in the first lode is much as it has been for some weeks past. In the 54 N. 14-2 ft. were driven; the end still lets out a good quantity of water, and the lode has improved in appearance, showing spots of green ore.

At Gujás cross-cut a hard bar of ground was struck; only 5-4 ft. were driven. There is now a change on the breast.

The 15 winze was sunk 3 ft. at \$21 per foot; the present ore streak appears to pitch east; it carries more quartz than for some time past.

West cross-cut San Jose was advanced 9-4 ft. by two men; price only \$6; this cross-cut is near the junction of Gujás and Mina Grande lodes; we wish to see the western branch at that place.

The winze below the rise was sunk 7-2 ft.; we expect to hole into the slope very soon.

The timbermen did not do anything in the rise, having had to attend to a breakage of the pumps.

IMPROVED WIRE-ROPE TRAMWAY.—In the construction of wire-rope tramways an improved jumper or support has been invented by Mr. GEORGE KILGOUR, of Dutoitspan, Griqualand West, South Africa. It is particularly valuable when erected in situations involving a sudden deviation in the direction of the wire ropes from the horizontal to the inclined direction, or *vice versa*, as, for example, in passing over the edge of the cliff or bank of a quarry, mine, or other open excavation. In aerial or other wire rope tramways of this kind the wire ropes for the carriages (in which the tubs are hung) to run upon are fixed or anchored at one end and tightly strained at the other, and in passing over the edge of the cliff or bank of the quarry, mine, or other excavation, each rope is usually carried over and supported by a curved rail, termed a jumper, having a groove in its upper surface for the rope to lie in. Two quadrant-shaped frames are, by suitable ties and struts, braced together at the proper distance apart to carry the wire ropes. The curved part, or periphery, of each of these quadrants is a rail, preferably of cast steel, grooved for the wire rope to lie in, and with bevelled flanges for the wheels of the carriages to run upon in passing over the jumper. These two quadrant-shaped frames are mounted on a horizontal shaft, supported in bearings on a suitable foundation or base plate, upon which shaft the jumper is free to oscillate as a centre, the centre of oscillation preferably coinciding with the centre of curvature of the quadrant. Instead of being mounted to oscillate on a shaft or pivot, the jumper might be made to rock on any other fulcrum or centre, or be otherwise supported so as to have a motion about a centre or axis. For example, the curved rail may be supported upon rollers, themselves rolling on a curved path or frame concentric with the curvature of the movable rail. Suitable sheaves are mounted in the jumper for supporting and guiding the hauling rope.

NEW PUDDLING FURNACE.—In order that three puddlers can work at one furnace, so as to save time, fuel, and materials, and turn out a greater quantity of puddled iron at less cost than in furnaces as at present arranged, Mr. JOHN JONES, of West Bromwich, proposes thus to construct a furnace. By preference the shape thereof is an oblong, having two of its corners cut off, and this is for better enabling the puddlers to work their metal, and to prevent the possibility of any portion of the metal, when in a soft state, becoming wedged in the sharp corners. The other portions of his improved furnace are, for the most part, similar to those now in general use, except that the stack or flue is built upon the top of the said furnace, so as to make room for the third puddler. Hence it will be understood that one puddler can work at a door in the front end of the furnace, and one through doors fitted on each side of the furnace, and opposite to each other.

TRUBNER'S LITERARY RECORD.—The July number of Messrs. Trubner's American, European, and Oriental Literary Record contains an obituary notice of Prof. Theodor Benfey, the eminent linguist and orientalist of Göttingen; interesting little articles on the Fourth Century of the Introduction of Printing in Vienna; Cypriot antiquities; the Royal Asiatic Society; and the Hawaiian Islands; together with the usual literary intelligence. It appears that the

Revised Version is about to be printed in the new American ideal fonetic alphabet. The usual lists of new American books and recent European literature are given, and there is also a list of Sanskrit books printed in India.

MADRAS GOLD.—In a report upon this company's property, dated June 28, Mr. H. W. Jarvis, the manager, says: "With regard to the old native workings, some of them are more than ordinarily well defined, those marked A on the plan being of a very extensive character; of course, as these extensive excavations have been made so many years ago, it is nearly impossible to get reliable evidence as to their richness, but we have a tolerable guarantee that they must have paid well for working in the old time, not on account of the extent of the excavations alone, but by the fact that even at the present day a fair prospect of gold can be obtained from the debris lying on the banks of these excavations, thus proving pretty conclusively that a large quantity of gold must have been obtained by the ancient workers. There are other ancient workings on the property of this company, but not of such an extensive character as those above mentioned, but from the debris of most of them I can obtain a very fair prospect of gold, thus showing that the gold is pretty well disseminated."

LADY ASHBURTON.—The first ordinary general meeting of the shareholders was held at Golding's Hotel, Callington, on July 29th. In the absence of the chairman of directors, Major Gilbert was called upon to take the chair. The chairman stated that the secretary having failed to attend the meeting, and not having furnished a detailed statement of accounts, as instructed, the directors felt called upon to suspend him. The chairman moved that the accounts as rendered be received, subject to audit, which was seconded by Mr. Sampson Bennett, and carried. Two satisfactory reports, strongly supporting the favourable opinions given of the mine were read, and appear in this day's *Mining Journal*. The books and vouchers are in the hands of the auditor, and as soon as possible a report will be sent to the shareholders.

THE DIAMOND FIELDS.—There have been several robberies of diamonds lately at Kimberley, and illicit buying from the native workmen has again become extremely rife. The diggers are agitating for more stringent punishment against the offenders, and a Jew named Andries Posno has been sentenced to five years' imprisonment on being found guilty of the offence.

SILVER VALLEY MINES.—A petition for winding-up this company has been presented to the High Court of Justice.

The directors of Mason and Barry (Limited) have declared an interim dividend of 10 per cent. per annum, or 10s. per share.

Mr. Commissioner Kerr has appointed Mr. William Russell Crowe official liquidator of the Cosmopolitan Deposit and Investment Permanent Building Society.

Mr. Horace Woodburn Kirby, of the firm of Leslie, Kirby, Strath, and Co., of Coleman-street, has been appointed, by Mr. Justice Fry, the official liquidator of the Penarth, Sully, and Barry Railroad Company.

ENGLISH-AUSTRALIAN GOLD.—Mr. Mark Pollard, Fryerstown, June 18: In the 423 ft. level I have four men driving south from No. 1 rise on a block of stone about 40 ft. below the 320 ft. level, with leaders of quartz on the western wall, and a block of stone on the footwall. I see gold in them, and I think this is payable. In the 232 ft. level I have connected the rise from the back of this level to the 180, and have commenced to stop north; the quartz is 6 ft. thick, and I see gold in them. I have removed the men from the 207 ft. level about 40 ft. lower down No. 1 rise to drive north; we have a little quartz in the drive, but have not seen any gold in them. In the 180 ft. level the stopes are looking just the same, but the ground going north is very hard, and all the quartz in this level is very hard and stoney ground. In the 150 ft. level the stopes in the back are looking better going north. In driving from a rise at the north part of our workings mentioned in my last report I met with a good block of stone as far as I can see now. Yesterday I picked out about 1 oz. of gold from the face of the drive—it might not be anything more than a patch, as the ground is patchy; but it looks very well just now, it being a new splice of stone.

WANTED, ONE STEAM ENGINE, with capstan attached, capable of lifting 25 or 30 tons. Also, TWO DOUBLE TUBE BOILERS, 30 ft. long and 7 ft. diameter, either new or second-hand, in first-rate condition. State lowest price, delivered at Bagillt Station, on the Chester and Holyhead Railway, to E. J. BARTLETT, Esq., 30, Great St. Helen's, London, E.C.

TO GOLD MINING COMPANIES.

A GENTLEMAN of great business experience, who has held positions of the highest importance in India and in the City, is OPEN to an ENGAGEMENT where trust would be appreciated. Would act as Chief Agent for a Mining Company, or as Accountant. The highest references.

Address, "India," MINING JOURNAL Office, 26, Fleet-street, E.C.

A MINING ENGINEER (ASSOCIATE ROYAL SCHOOL OF MINES) is desirous of REMUNERATIVE EMPLOYMENT, preferably on Colonial Survey.

Address, post paid, to "A.R.S.M.," care of John Mammatt, Esq., Leeds.

TO CAPITALISTS.

A FEW THOUSAND £1 SHARES IN A GOLD MINE, in which 10 per cent. dividend is guaranteed for the present year, are OFFERED FOR DISPOSAL, BY PRIVATE TREATY. Large bonus will be given if taken immediately.

Address, "N. C. 52," Deacon's Advertising Offices, 154, Leadenhall-street, E.C.

RICHMOND CONSOLIDATED MINING COMPANY (LIMITED).

Capital, £270,000, in 54,000 shares of £5 each.

AMOUNT OF DIVIDENDS ALREADY PAID £246,517 10s.

TWENTY-NINTH DIVIDEND.

Notice is hereby given, that the directors of the above company have THIS DAY DECLARED A DIVIDEND OF TEN SHILLINGS PER SHARE (free of income-tax) PAYABLE on and after TUESDAY, the 9th day of August inst., at the company's bankers, the Union Bank of London, Princes-street, E.C.

And notice is hereby further given, that the Transfer Books will be closed from 6th to 9th August, both days inclusive.

By order of the Board, HUBERT AKERS, Secretary.

Offices, 44, Coleman-street, London, E.C., 2nd August, 1881.

C. T. REEVES AND CO., (ESTABLISHED 1872.) STOCK BROKERS, 19, WALBROOK, LONDON, E.C.

INVESTMENTS IN STOCKS AND SHARES.

Purchases and Sales of Home, Foreign, and Colonial Stocks and Shares made at the closest market prices either for cash or the fortnightly settlement.

LOANS.

Advances made on Stocks, Shares, and other negotiable Securities at equitable rates of interest.

Special Business in Gold Mining Shares.

C. T. R. and Co.'s Monthly Price List and Report on the Stock Markets sent post free on application.

KING AND HUMBLE'S

PATENT DETACHING HOOK,

To prevent over winding

PATENT SAFETY CAGE,

To suspend in Shaft in cases of fracture of Winding Rope,

Winding and Hauling Engines, Special Centrifugal Pumps,

Weighing Machines, Ore Crushers, Steel Castings, Mining Steel Pulleys, Winches, Steel Shovels, Mining Tools, Mining Machinery of every description.

Stephen Humble, Engineer, Derby.

MINERS' ASSOCIATION OF CORNWALL AND DEVON.

LECTURER is REQUIRED early in SEPTEMBER, owing to the resignation of Mr. B. KITTO, F.G.S. Salary £100 per annum, and fees earned as Teacher of Science Classes in connection with South Kensington. He will be required to reside in Camborne and take charge of the Basset Laboratory.

Full particulars may be obtained from the Undersigned, and applications, with testimonials, should be sent on or before Monday, the 15th August. **ROBERT S. HUDSON, M.D., Hon. Sec.** Redruth, Cornwall, 29th July, 1881.

STEPHEN BARKER,
NICKEL AND NICKEL SILVER WORKS
OOZELL STREET NORTH,
BIRMINGHAM.

GLASGOW AND THE HIGHLANDS.

ROYAL ROUTE VIA CRINAN AND CALEDONIAN CANALS
by Royal Mail Steamer, COLUMBA or IONA, from GLASGOW daily at 10 A.M., and from GREENOCK at 9 A.M., conveying PASSENGERS for OBAN, ORTH and WEST HIGHLANDS.
Official Guide Book, 2d.; Illustrated Copies, 6d. and 1s., by post, or at Euston, t. Panera, King's Cross Railway Bookstalls, London.
Bill, with Map and Tourist Fares, free by post, from the Owner, Mr. DAVID MACBRATNE, 119, Hope-street, Glasgow.

TO MINING ENGINEERS.

AN AMERICAN MINING ENGINEER, enjoying a large practice in California, Nevada, Idaho, Utah, Colorado, Arizona, Mexico, and New Mexico, DESIRES TO EFFECT AN ARRANGEMENT with an English Mining Engineer, having an office in London, to TAKE ORDERS for the EXAMINATION OF MINES in the above-named States and Territories.
Address, ALEX. DEL MAR, 114, Gresham House, London, E.C.

MR. CHARLES WILLIAMS, MINING ENGINEER AND SURVEYOR, DOLE HOUSE, TALIESIN, R.S.O., is at all times in POSITION TO FURNISH CAPITALISTS with RELIABLE INFORMATION in the SELECTION OF MINING PROPERTIES in CARDIGANSHIRE and NORTH WALES. Investors will do well to consult the above before laying out money in the districts named.

"THE JAMIN" PATENT ELECTRIC LIGHT

COMPAGNIE GENERALE D'ECLAIRAGE ELECTRIQUE.

Capital, 8,000,000 Francs.

Proprietors of the Gramme Patent Machine for Alternate Current
J. A. BERLY, C.E., A.S.T.E., &c.,
Engineer, and Sole Agent for Great Britain and the Colonies
16, NEW BRIDGE STREET, LONDON.

NEW AND REVISED EDITION OF MITCHELL'S PRACTICAL ASSAYING.

In One Vol., 8vo., with 188 Woodcuts, price 31s. 6d.

A MANUAL OF PRACTICAL ASSAYING.

By JOHN MITCHELL, F.C.S.

The FIFTH EDITION, revised and re-edited by WILLIAM CROOKES, F.R.S., with Improvements and Additions rendered necessary by the Progress of Chemical Science.
London: LONGMANS and Co.

STOCKS AND SHARES.

FOREIGN BONDS, RAILWAYS, TRAMWAYS, GAS, INSURANCE, IRON, COAL, AND MISCELLANEOUS SHARES.
Prices, with reliable information, forwarded on application to—
Messrs. H. R. LEWIS AND CO.,
BATHOLMEW HOUSE,
LONDON, E.C.

SPECIAL INFORMATION in the SELECTION OF MINING SECURITIES. The "MONTHLY INVESTMENT LIST" and the "WEEKLY PRICE LIST" may be had on application.

MR. P. S. HAMILTON (late Chief Commissioner of Mines for the Province of Nova Scotia), PRACTICAL GEOLOGIST, MINING AGENT, and MINING ENGINEER, HALIFAX, NOVA SCOTIA. PURCHASES and SALES of MINING PROPERTY effected, with careful regard to the interests of clients.

Messrs. THOMPSON AND SON, STOCKBROKERS, PLYMOUTH, have for sale the undermentioned shares, for which offers are requested for any portion:—100 West of England Peat Company; 50 Devonport and Tiverton Brewery; 50 Tin Hill Mine; 50 Fortescue Stannagwyn; 75 Lomax, Old Wheel Rose, 10 per cent. div.; 25 West Pateley Bridge; 10 Roman Gravel; 75 New Penrose, 12s. 6d. paid; 50 ditto, fully paid; 50 Frongoch; and numerous others, a list of which can be had on application.

THE MINING INQUIRY OFFICE

262, GRESHAM HOUSE, E.C.

DALSTON AND CO.,
23, THREADNEEDLE STREET, LONDON, E.C.
Have Agents throughout the United Kingdom and all parts of the World. Intelligence obtained on Foreign Loans, Railways, Public Works, Gold, Tin, Copper Mines, &c.
HOME MINING INTELLIGENCE SUPPLIED FREE.

Messrs. THOMPSON AND CO.,

STOCK AND SHARE DEALERS.

44, THREADNEEDLE STREET, E.C.

BANKERS: ROYAL EXCHANGE.

Business transacted in every description of Stocks and Shares. TREASURY CONSOLS.—Attention called to the report in this day's Journal. An important rise in the price of shares must take place—price 22s. 6d.

PENNINGTON AND CO., SWORN BROKERS,

3, ROYAL EXCHANGE BUILDINGS, E.C.

Transact business in every description of Stocks and Shares. ESTABLISHED 1869.—BANKERS: ALLIANCE.

TREVINCE CONSOLS. We have still a few shares left at £1 2s. 6d., which ought to be secured at once, as the mine is daily improving, and they must have a big rise very shortly.

SPECIAL BUSINESS in Devonport and Tiverton and Grey's Breweries, New Gold Run, Gold Coast, Dingley Dell, and Dieu-Donne shares.

WILLIAM M. VIVIAN, M.Inst.M.E., EXAMINES and REPORTS on MINERAL PROPERTIES, and PREPARES PRIVATE REPORTS on new concerns for intending investors. Estimates given for erecting Machinery, Pitwork, Sidings, and Developing Mines. Ten years' experience. Highest references. Terms low.

Address: LLANTISANT, SOUTH WALES.

JOSEPH RICHARDS, M.E.,
Late of the Devon Great Consols, England. Late Mineral Agent for the Earl Fortescue, England. Thirty-one years' experience; eleven years on the Pacific Coast.

JOHN TREGLOAN, M.E.,
Forty years' experience in England and the United States.
CONSULTING AGENTS AND ENGINEERS

THE PACIFIC COAST MINE AGENCY AND MINING PROTECTIVE ASSOCIATION,

22, GEARY STREET (ROOM 11),

SAN FRANCISCO, CAL.

Information conveyed as soon after receipt of enquiry as possible. Fee for ordinary enquiry, Ten Guineas.

68, HUNTER STREET, SYDNEY.

FRANCIS AND RICHARDS, CIVIL AND MINING ENGINEERS AND SURVEYORS.
Colonial Mining Properties, Metals or Minerals examined or reported on. Terms moderate.
References in England: Messrs. JOSEPH MATTHEWS and Co., Engineers and Ironfounders, Tavistock, Devon.

CALIFORNIAN AND EUROPEAN AGENCY.

509, MONTGOMERY STREET SAN FRANCISCO, CAL.

J JACKSON Manager

GLAMORGANSHIRE. FREEHOLD HOUSE, LAND, AND MINERALS FOR SALE.

Messrs. R. JONES AND SON WILL SELL BY AUCTION at the Wyndham Arms Hotel, Bridgend, on Saturday, the 13th day of August, 1881, at Two for Three o'clock, P.M., subject to conditions to be then produced, all that FREEHOLD FARM called "New House," otherwise "Ty Newydd," Bayden, containing by admeasurement 79 acres of land, more or less, whereof about 11 acres are woodland and the rest chiefly pasture, situate near Cefn Cribwr, and in the Hamlet of Bayden, in the parish of Llangonoyd, Glamorganshire, and now in the occupation of Messrs. Edward Thomas and Rees Jenkins, as yearly tenants.

The house has recently been repaired at considerable expense, and is fit for the residence of a gentleman.

The minerals consist of all the same valuable seams of Coking, House, and Steam Coal, and Fireclay, as have been so extensively worked (to within half-a-mile of the property) at the Cefn Colliery, the property of C. R. M. Talbot, Esq. The Rock Vawr seam of coal, 4 ft. thick, with a capital rock roof, is got by a level on the property; and immediately below the coal is excellent fireclay that can be worked with the coal.

The property is little more than half-a-mile from the Llynvi and Ogmore Railway, by which means there is direct access to all parts of the kingdom, and the shipping port of Porthcawl is only 6 miles distant.

For further particulars, and permission to view, apply to the Auctioneers, at Bridgend; to ROBERT SOUTHERN, mining engineer, Burleigh House, Tredegarville, Cardiff; or to THOMAS STOCKWOOD, Solicitor, Bridgend.

IMPORTANT ABSOLUTE SALE OF VALUABLE COLLIERY PLANT AND MACHINERY.

NEW AND OLD TYR FILKINS COLLIERIES, BLACKWOOD, MON.

Messrs. STEPHENSON, ALEXANDER, AND CO. are instructed by Henry Powell, Esq., who has abandoned the workings TO SELL BY AUCTION, on Thursday and Friday, August 18 and 19, the WHOLE of the VALUABLE

PLANT, MACHINERY, STORES, AND EFFECTS

At these COLLIERIES—viz.,

An excellent PUMPING ENGINE, 60 in. cylinder, 10 ft. stroke, two winding engines, powerful double portable steam engine, by Barrows and Stewart, 11 in. cylinder, 17 ft. stroke, 5 in., 8 in., and 8 in. donkey engines, 18 egg end and Cornish boilers and fittings, about 200 tons of W.J. tram rails and cast iron parts, 6 tons of forged steel plates, 12 in., 18 in., and 20 in. lifts, with clack and 11 pieces complete, 50 tons of 3 in., 4 in., 6 in., and 11 in. flange and socket piping, 30 tons of cast and wrought iron scrap, 20 tons fire bars, 2 tons tram axles, about 1000 yards of wire rope, 900 yards gas piping, oak and beam crusher, two single and double knife chaff cutters, 150 wood and iron tub trams, 3 ft. 4 in. gauge, four special steam pumps, four permanent road and colliery weighing machines, two turntables, four single and double purchase crab winches, 4 ft., 8 ft., and 11 ft. pit sheaves, 100 sleepers, 5 pairs fans, 50 sets colliers' tools, 16 tons balance weight, 1 ton tested ditto, 59 coke oven doors, 17 ditto grids, 3 hand pumps, 500 ft. Manila rope, 5000 lbs. and crests, new engine girder, 2 boiler heaters, single, double, and treble sheave pulley blocks of various strengths, 500 cubic feet of pitch pine, gasometer, 12 ft. diameter (by Holmes and Co., Huddersfield), 1 ton brass bearings, steam pressure gauges, also the office furniture, consisting of deal desks, tables, chairs, dials, barometers, the contents of the stores, blacksmith's shop, &c., &c.

The Collieries are situate within half a mile of the Tredegar Junction and Blackwood Stations.

There is ample accommodation, which will be available for 14 days after the sale. Detailed catalogues are in preparation, and may be obtained of the Auctioneers, Cardiff, on and after August 6.

TO BE SOLD, pursuant to an Order of the High Court of Justice, Chancery Division, made in an action of JAY v. the BAGWORTH COLLIERY COMPANY (LIMITED), with the approbation of the Master of the Rolls, the Judge to whose Court the said action is attached, by GEORGE TEMPEST WADE, the person appointed by the said Judge, at the Wellington Hotel, Leicester, in the county of Leicester, on Wednesday, the 10th day of August, 1881, at Two for Three o'clock in the afternoon precisely, in One Lot, the LEASEHOLD MINING PROPERTY known as the

BAGWORTH COLLIERY,

Adjoining Bagworth Station, on the Leicester and Burton line of Railway, comprising

TWO HUNDRED AND NINE ACRES, or thereabouts, of UNGOT COAL, with DWELLING HOUSE, COTTAGES, and the WHOLE of the FIXED and LOOSE PLANT.

Printed particulars and conditions of sale, with plan annexed, may be had gratis in London of Messrs. DRAKE, SON, and PARTON, 24, Rood-lane, Fenchurch-street, Solicitors; Messrs. PEACE and WALLER, 11, Grocer's Hall Court, Poultry, Solicitors; and Mr. JAS. COOPER, 3, Colman-street Buildings, Public Accountant; also of the Auctioneer, Mr. GEORGE TEMPEST WADE, Horsefair-street, Leicester; and at the place of sale.

Dated this 15th day of July, 1881.

TO BE LEASED, BY PUBLIC AUCTION, on Tuesday, the 10th day of January, 1882, at the Crown Lands Office, in the Athenaeum Building, St. John's, Newfoundland, the following

MINING AREAS.

Reserved to the Crown under the laws relating to MINES and MINERALS, out of various licenses to search for and to be granted, in such Lots, and upon such terms and conditions as shall be hereafter prescribed by the Governor in Council:—

1.—About 2 square miles, being the residue of a license to search for minerals granted to Messrs. A. Gorman and Wm. Stirling, situate on the north side of Little Bay, Notre Dame Bay, from which they have selected 1 square mile—the said square mile being what is known as the Little Bay Copper Mine, now in active operation.

2.—About 2 square miles, being the residue of a license to search for minerals granted to Messrs. Josiah Colborne and Henry Knight, situate at Shoal Arm, on the south side of Little Bay, Notre Dame Bay, from which they have selected 1 square mile.

3.—About 2 square miles, being the residue of a license to search for minerals granted to Mr. Thomas Peyton, situate on the north side of Hall's Bay, Notre Dame Bay, from which he has selected 1 square mile.

4.—About 2 square miles, being the residue of a license to search for minerals granted to Mr. James Norris, situate on the south side of Western Arm, Three Arms, Notre Dame Bay, from which he has selected 1 square mile.

5.—About 2 square miles, being the residue of a license to search for minerals granted to Messrs. John Bowring and Robert Knight, situate on the south side of Green Bay, Notre Dame Bay, from which they have selected 1 square mile. This area is known as Nick's Neck claim.

6.—About 2 square miles, being the residue of a license to search for minerals granted to Messrs. White, Rogerson, and others, situate at Birch Cove, on the south side of the South West Arm of Green Bay, Notre Dame Bay, from which they have selected 1 square mile.

7.—About 2 square miles, being the residue of a license to search for minerals granted to Messrs. White, Rogerson, and others, situate at Mansfield's Point, on the south side of the South West Arm of Green Bay, Notre Dame Bay, from which they have selected 1 square mile.

8.—About 2 square miles, being the residue of a license to search for minerals granted to Hon. Edward White, situate 1 mile inland from "Naked Man" rock, on the south side of South West Arm, Green Bay, Notre Dame Bay, from which he has selected 1 square mile.

9.—About 2 square miles, being the residue of a license to search for minerals granted to Philip Cleary, Esq., situate at Rabbit's Arm, Notre Dame Bay, from which he has selected 1 square mile.

10.—About 5 square miles, being the residue of three licenses to search for minerals, granted to Philip Cleary, Esq., situate at Sunday Cove Island, Notre Dame Bay, from which he has selected 3 square miles.

11.—About 1 square mile, being the residue of a license to search for minerals granted to Messrs. Gilbert Browning, James Fletcher, Robert A. Mackim, and James Browning, situate at Thimble Tickle, Seal Bay, Notre Dame Bay, from which they have selected 1 square mile.

12.—About 4½ square miles, being the residue of two licenses to search for minerals granted to Messrs. David Baird, James Goodfellow, and Alexander Smith, situate on the eastern part of Pilley's Island, Notre Dame Bay, from which they have selected 2 square miles.

All further information relative to the terms and conditions of letting, the extent of the several lots, &c., may be obtained on application at the Crown Lands Office, where diagrams of the several areas can be seen.

W. J. S. DONNELLY, H. M. Surveyor General.
St. John's, Newfoundland, July 5th, 1881.

GAREFIELD COLLIERY AND ESTATE, comprising 1900 acres, more or less, of FREEHOLD COAL; 500 acres, more or less, of FREEHOLD FIRE-CLAY; 50 acres, more or less, of LEASEHOLD COAL; 570 acres, more or less, of LEASEHOLD FIRE-CLAY; and 500 acres, more or less, of LAND; and the MINES OF COAL under the estate of Ravensdale, containing 225 acres, more or less, all situate in the parish of Ryton, in the county of Durham, will be

OFFERED FOR SALE, BY PUBLIC AUCTION,

At Newcastle-upon-Tyne, on or about the FIRST WEEK in AUGUST, 1881.

Further particulars and information will be given in future advertisements, and can be obtained from Messrs. J. and F. ANDERSON, W.S., 45, Castle-street, Edinburgh; Messrs. J. and G. H. GIBBES, Mining Engineers, Edinburgh; Messrs. T. and R. ARMSTRONG, Land Agents, 14, Hawthorn-terrace, Newcastle-upon-Tyne; Wm. GREEN, Esq., Mining Engineer, Thornhill House, Blaydon-on-Tyne; or Messrs. CLAYTON and GIBSON, Solicitors, Guildhall, Newcastle-upon-Tyne.

TO PROMOTERS OF COMPANIES.

ONE OF THE MOST VALUABLE ANTIMONY SETTS that has been offered to the public for many a long year MAY NOW BE OBTAINED. Whole rocks of the above ore can be seen at surface, weighing from ½ to 1 cwt., in a rock.

To treat for the same, apply to W. PAYNTER, Jun., Wadebridge.

FOR SALE, a 30 H.P. PORTABLE STEAM ENGINE; with link-motion reversing gear, has drum and gearing complete for winding and pumping.

A 14 H.P. PORTABLE WINDING and PUMPING ENGINE.
Also a 6 H.P. PORTABLE HOISTING ENGINE.
Apply to—
BARROWS AND STEWART, ENGINEERS, BANBURY.

VALUABLE AND EXTENSIVE FREEHOLD MINING TRACTS in the Kingdom, surrounded by Mines that have yielded enormous profits for very many years, a large number of the rich lodes of which pass through the property offered. Terms very moderate.

Would suit private parties for investment, or could with great advantage be made into one or several very attractive public companies (particularly at the present time), as there would be no rents or royalties payable on the returns—a most unusual thing—and a great saving in the working of the Mines. Reports by several of the most eminent practical authorities exceedingly favourable, which can be seen.

Address, for further particulars, Messrs. HANCOCK, SHARP, and HALES, 24, King William-street, London, E.C.

SILVER-LEAD MINE FOR SALE, sufficiently developed that immediate returns of ores can be made. A limited capital only required to open up a permanent and profitable mine. Inspection invited.

Address, "S. L.," MINING JOURNAL Office, 26, Fleet-street, London.

THE PROPERTY OF THE IRON ORE (LIAS SUPERIOR) equivalent of the CLEVELAND FORMATION) contained in several VAST GROUNDS (3000 and 650 hectares) in GERMAN LORRAINE, IS TO BE SOLD UNDERHAND.

Detailed statement shall be handed if demanded, not anonymously, by letter, directed, free of postage, to "J. P. 513," Poste Restante, Metz (Lorraine).

RAILWAY WAGONS.

FOR SALE, FIFTY SECOND-HAND 8-ton WAGONS built to a first-class specification, and now in thorough repair. For particulars as to price, and to inspect the wagons, address "E. M.," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

FOR SALE OR HIRE, ONE HUNDRED TO TWO HUNDRED or MORE 3½ and 4-yard END TIP WAGONS: also several 8 in. and 13 in. cylinder TANK LOCOMOTIVES, and other CONTRACTOR'S PLANT, equal to new.

Apply, JOHN DICKSON, Jun., or A. C. BETTS, New North Works, Bootle, near Liverpool.

FOR SALE, FORTY SHARES in MOUNTS BAY CONSOLS (7s. 6d. paid), price 2s. 6d.

Apply to "Alpha," Chronicle Office, Stratford-on-Avon.

TIN MINE TO BE DISPOSED OF, on reasonable terms—good district, and easily worked by water power. Seven lodes discovered. Rare opportunity.

Address, "A. B.," Tabb's Hotel, Redruth, Cornwall.

PAIR OF PUMPING ENGINES, coupled, ½ in. centres, cylinders 13 in., stroke 24 in. Second-hand, in good condition.

Apply to JOHN CROWLEY and Co., Meadow Hall, near Sheffield.

FOR SALE, an ANTIMONY SETT of great value, having rich and well-defined lodes. Also a TIN SETT, in the best mining district in Cornwall.

Address, "Cornwall," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

FOR SALE (CHEAP).—12-ton POOLEY'S WEIGHBRIDGE equal to new. Platform 12 feet long by 7 feet wide, with reversing gear. Pooley's London Agent will guarantee the quality.

Apply, S. KEARTLAND, Mill-street, Lambeth.

ENGINES, BOILERS, &c., FOR SALE:—
FIRST-CLASS 50-inch cylinder PUMPING ENGINE
ditto 24-inch ROTARY ENGINE
CALCINER, STONEBREAKER, &c.

Apply to Capt. NICHOLLS, Camborne.

LAS CALDAS FREEHOLD MALACHITE COPPER MINING COMPANY (LIMITED).

Business in these Shares at close Market Prices.
Messrs. WARD AND CO., 184, PALMERSTON BUILDINGS
OLD BROAD STREET, LONDON.

MINE "EL CALLAO," GUAYANA, VENEZUELA.

COUPONS OF SHARES..... 322
Gold in bars produced in the month of June, 1881, and remitted to Messrs. Baring Brothers and Co., London, 6909-42 ozs.

DIVIDEND distributed for each coupon, \$200.
(Signed) A. J. CAGNINACCI, Vice-President.
(Signed) VICTOR J. GRILLET, Treasurer.

MASON AND BARRY (LIMITED).

SAN DOMINGOS MINE, PORTUGAL.

Notice is hereby given, that an INTERIM DIVIDEND for the half-year ending 30th June, 1881, at the rate of TEN PER CENT. PER ANNUM, or 10s. per share, free of income tax, was DECLARED at the Board Meeting, held on the 18th ult., PAYABLE on and after Monday, the 15th inst., either at the Office of the Company, No. 87, Cannon-street, London, E.C.; or in Paris, at the Comptoir d'Escompte de Paris.

The holders of Share Warrants to Bearer and of Provisional Certificates must leave coupons (series No. 15) for examination four days previous to payment, between the hours of Eleven and Two on any day except Saturday.

Coupons required to be paid in Paris will be paid at the current rate of exchange.

By order, **JOHN G. BARRY, Secretary.**
Offices of the Company, London, 87, Cannon-street, E.C., August 1st, 1881.

GREAT POLGOOTH UNITED TIN MINES COMPANY

(LIMITED).
43 and 49, Palmerston Buildings, London, 2nd August, 1881.

To the Shareholders of the Great Polgooth United Tin Mines Company (Limited).

SIR,—Having received enquiries from several of the Shareholders as to the legal proceedings now being taken against the Great Wheel Polgooth Mine, showing that, notwithstanding my disclaimer in the newspapers, many are still misled by the similarity of the name, I deem it advisable to issue this notice to each of them, stating that the Great Wheel Polgooth Mine IS NOT, AND NEVER WAS, IN ANY WAY CONNECTED with the GREAT POLGOOTH UNITED TIN MINES COMPANY (LIMITED).

I also take this opportunity of informing you that everything connected with your mine is proceeding as satisfactorily as could be desired; and that the FIRST QUARTERLY DIVIDEND, at the rate of SEVEN AND A HALF PER CENT. per annum, will be PAYABLE on and after the 13th instant, on all fully paid up shares.

G. H. KEENE, Managing Director.

JOSEPH TOMS, STOCK AND SHARE DEALER,
No. 88, BISHOPSGATE STREET WITHIN, E.C.

MINING ENGINEER.

ALEX. DEL MAR.

Mining Engineer, late Director of the United States Bureau of Statistics, Mining Commissioner for the United States Monetary Commission, &c., 216, BANSLOW STREET, SAN FRANCISCO. Cable address—"Delmar, San Francisco." Branch Office, 61, Broadway, New York. Cable address—"Delmar, New York." Branch Office, Messrs. H. Slopes and Co., 24A, Southwark-street, Borough, London. Cable address—"Delmar, London."

MONEY LENT, at EIGHT, NINE, and TEN PER CENT., on FIRST MORTGAGE OF FREEHOLDS for IMPROVEMENTS and STOCKING, said freeholds in the Province of MANITOBA.

Address, HERBERT C. JONES, Solicitor, 20, Masonic Hall, Toronto.

"SOW AND REAP," published this day, post free 14d. stamp. This reliable monthly contains original information for investors, and special recommendations. The motto is HOW TO MAKE MONEY AND AVOID LOSS. The whole series should be read to form an estimate of its value. Special information on mines.

Published by THOMPSON and SON, Plymouth.

NOBEL'S DYNAMITE



Manufactured and sold by

NOBEL'S EXPLOSIVES COMPANY (LIMITED), 149, West George Street, Glasgow.

AGENTS EXPORT: J and G THORNE, 85, GRACECHURCH STREET, LONDON, E.C.

FACTORIES--ARDEER WORKS, STEVENSTON, Ayrshire.

WESTQUARTER WORKS, POLMONT STATION, STIRLINGSHIRE.

Supplies may be obtained from any of the following Agents of the Company in Great Britain:—

HENRY KITCHIN and CO., 46, Lowther-street, Whitehaven.
F. H. EDWARDS, Forth House, Newcastle-on-Tyne.
FANSON, ARMSTRONG, and CO., Middlesbro'-on-Tees.
ALBERT RICKETTS, Dean-lane, Bedminster, Bristol.
B. READ, Reforme, Portland, Dorsetshire.
LEIGH and SILLAVAN, Barton House, 66, Deansgate, Manchester.
GEORGE ROBERTS, George-street, Gloucester.
J. H. BEAN and CO., 6, Albion-street, Leeds.
Wm. RICH and SONS, 4, Basset-street, Redruth, Cornwall.
CROSS BROTHERS, 21, Working-street, Cardiff.
G. WILLIAMS, 6 and 7, Baker-street, Aberystwith.
WEBB and CO., Llanberis, Caernarvon.
J. T. EACHUS, Holywell.

JOHNSON and CO., Tower-street Dudley.
TODHUNTER and ELLIOT, Market-place, Douglas, Isle of Man.
ROBERT HAMILTON, 29, St. James-square, Edinburgh.
JOHN DONALD, 4, Belmont-street, Aberdeen.
WILLIAM WATSON, Sunnyside-road, Coatbridge.
ROBERT HAMILTON, Douglas-street, Dunfermline.
JOHN D. M'JANNET, Park-place, Sterling.
GEORGE STEPHEN and SON, Castle-street, Dundee.
R. and J. CARSON, 8 and 10, Corn Market, Belfast.
SAMUEL BOYD, 46, Mary-street, Dublin.
CLOHERTY and SEMPLE, Merchants'-road, Galway.
COOKE BROTHERS, 67, Patrick-street, Cork.

THE COTTON POWDER COMPANY (LIMITED)

RECOMMEND TO CONTRACTORS, MINERS, PIT SINKERS, QUARRYMEN, AND OTHERS, THEIR

TONITE, OR COTTON POWDER,

AS BEING THE SAFEST, CHEAPEST, AND STRONGEST OF ALL EXPLOSIVES.

TONITE is the most efficient and economical blasting agent ever invented, and is largely in demand. It does not contain any Nitro-glycerine, and is, therefore, exempt from the dangers of exudation, or of freezing and its attendant process of thawing.

The Company also manufacture PATENT DETONATORS of a quality much superior to the foreign article. The trade supplied on favourable terms.

OFFICES:

23, QUEEN ANNE'S GATE, LONDON, S.W.

WORKS: FAVERSHAM, KENT.

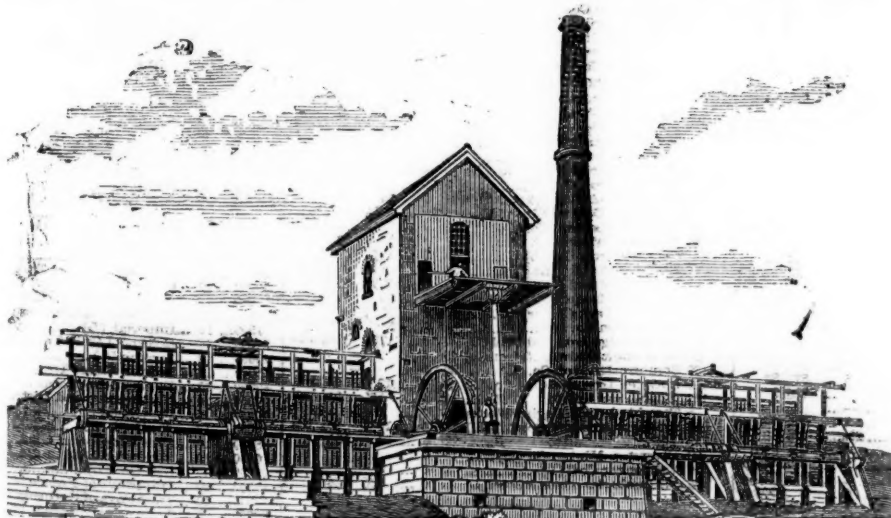
Agents DINEEN, SON, and CO., Leeds; DAVID BURNS, Haltwhistle; R. J. CUNNACK, Helston, Cornwall; J. and W. SMITH, Chapel-en-le-Frith; W. VEITCH, Jedburgh, N.B.; W. HARRISON, Barrow-in-Furness.

THE TUCKINGMILL FOUNDRY COMPANY,

(TUCKINGMILL FOUNDRY AND ROSEWORTHY HAMMER MILLS),

CAMBORNE, CORNWALL,

Engineers, Iron and Brass Founders, &c.



REGISTERED TRADE MARK.

MANUFACTURERS OF EVERY DESCRIPTION OF

REGISTERED TRADE MARK.

PUMPING, WINDING, AND STAMPING ENGINES

ALL KINDS OF

MINING MACHINERY, SHOVELS, AND MINERS' TOOLS;

ALSO OF

BLAKE'S STONE BREAKERS.

ESTIMATES GIVEN UPON INDENTS AND SPECIFICATIONS.

ILLUSTRATED CATALOGUES POST FREE ON APPLICATION

LONDON OFFICE: 85, GRACECHURCH STREET, E.C.

For Excellence
and Practical Success
of Engines.



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.,
ENGINEERS AND GENERAL MERCHANTS
HAYLE, CORNWALL

LONDON OFFICE.—186, GRESHAM HOUSE, E.C.

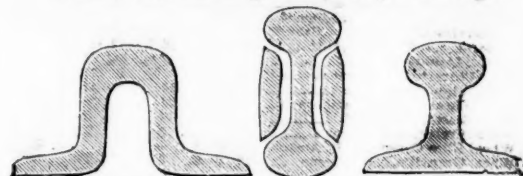
MANUFACTURERS OF
PUMPING and other LAND ENGINES and MARINE STEAM ENGINE
of the largest and most approved kinds in use, SUGAR MACHINERY
MILLWORK, MINING MACHINERY, and MACHINERY IN GENERAL

SHIPBUILDERS IN WOOD AND IRON.
MANUFACTURERS OF
HUSBAND'S PATENT PNEUMATIC STAMPS

SECOND-HAND MINING MACHINERY FOR SALE,
IN GOOD CONDITION, AT MODERATE PRICES—viz.

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of
various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

JOHN BEATSON & SON,
40h, St. Mary's Gate, Derby.



IRON AND STEEL RAILS, of all sections, from 10 to 86 lbs. per
yard, new perfect, new slightly defective, or second-hand, with Fish plates,
Bolts and Nuts, Chairs, Spikes, and Points and Crossings to match, when re-
quired.

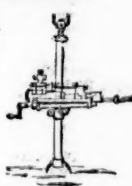
STEEL AND IRON WIRE ROPES, LOCOMOTIVE ENGINES, &c., &c.
BARS, PLATES, SHEETS, &c.
STEEL OF ALL KINDS. FIG IRON OF ALL KINDS
Delivered at all Railway Stations and Ports in Great Britain.

DUNN'S IMPROVED ROCK DRILL.



This DRILL is GREAT
STRENGTH and SIMPLICITY
SECOND TO NONE IN THE
KINGDOM.

We are prepared to SUPPLY
our well known MACHINES at
greatly REDUCED PRICES—
from £35, according to calibre
of cylinder



ESTIMATES GIVEN FOR PLANTS, &c., &c.

Dunn's Patent Rock Drill Company

(LIMITED),

OFFICE,—193, GOSWELL ROAD,
LONDON, E.C.

C. H. WALKER AND CO.,
MINING AGENTS AND ENGINEER,
VALPARAISO AND SANTIAGO,
CHILE

MEXICO, NEW MEXICO ARIZONA, UTAH, NEVADA
AND CALIFORNIA.

F. M. F. CAZIN,
MINING AND CIVIL ENGINEER,
At BERNALILLO, NEW MEXICO, U.S. OF AMERICA.

Has 24 years' experience in Mining and Smelting, and 10 years' experience of
American Business and Law, offers his services at moderate charges for Reporting
on Mining and other Property in any of the above-named States or Territories
gives correct, safe, and responsible advice as to securing full titles and possession
and, as to best mode of utilising the property, will assist in settling existing diffi-
culties by compromise, and in disposing of developed mining property when held
at real value; offers his assistance for securing undeveloped mining properties at
home prices. As to care taken in reporting, reference is made to the Mining
Journal, April 1, 1876, containing a report on property of the Maxwell Land
Grant and Railway Company; as to technical standing, to the prominent men of
the trade—compare Mining Journal of Aug. 30 and Nov. 31, 1872, and New York
Engineering and Mining Journal, Feb. 28, 1874.

TO ENQUIRERS.—Having received numerous letters asking for
my gratuitous opinion on mining properties, I beg to state that I cannot
afford time to answer letters of that description without the inclosure of a fee
—at least of a half-a-guinea.
R. SYMONS.
Turo, June 15.

THE MINING RECORD. Only \$3.00 a year.
61, BROADWAY, NEW YORK.
Is the ONLY PAPER in the United States that gives FULL LATEST ACCOUNTS
from all the GREAT GOLD, SILVER, IRON, and COAL MINES of AMERICA.
ORDERS EXECUTED FOR MINING STOCKS. Information free.
ALEX. ROBT. CRISHOLM, Proprietor.
London Office—H. J. CHAWNER, Manager, 3, Catherine-street, Strand, W.

Second Edition. Just Published, price 2s. 6d.

A NEW GUIDE TO THE IRON TRADE
OR MILL MANAGERS' AND STOCK-TAKERS' ASSISTANT.
Comprising a Series of New and Comprehensive Tables, practically arranged to
show at one view the Weight of Iron required to produce Boiler-plates, Sheet-iron
and Flat, Square, and Round Bars, as well as Hoop or Strip-Iron of any dimensions.
To which is added a variety of Tables for the convenience of merchants, including
a Russian Table.
By JAMES ROSE.
Batman's Hill Ironworks, Bradley, near Bliton.

OPINIONS OF THE PRESS.

"The Tables are plainly laid down, and the information desired can be instantly
reliably obtained."—Mining Journal.
"900 copies have been ordered in Wigan alone, and this is but a tithe of those
whom the book should commend itself."—Wigan Examiner.
"The Work is replete on the subject of underground management."—M. BANK
Colliery Proprietor.
To be had on application at the MINING JOURNAL Office, 26, Fleet-street, London.

Just published.

THE NORTH WALES COAL FIELD
Being a series of Diagrams showing the Depth, Thickness, and Local Names
of the Seams in the principal Collieries of the various districts, with Index, Geo-
logical Map, and horizontal sections across the Ruabon, Brynbo, Buckley, and
Mostyn districts.
By JOHN BATES GREGORY and JESSE PRICE,
of Hope Station, near Meid, Flintshire.

Price: Mounted on holland, coloured and varnished, and fixed on mahogany
rollers, 30s. each; or in book form, 12x9, mounted and coloured, 25s. each.
May be obtained, by order, of all Booksellers, or direct from the Mining
JOURNAL Office, 26, Fleet-street, London, E.C., upon remittance of Post Office
Order for the amount.

Just published, cloth limp, price 1s. 6d.

**THE COLLIERY READY-RECKONER AND WAGES
CALCULATOR.**

By JAMES IRELAND

"Will be the means of preventing many disputes between pay clerks and
colliers."—Mining Journal.
To be had on application at the MINING JOURNAL Office, 26, Fleet-street, E.C.

THE MINING SHARE LIST.

BRITISH DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
3533 Blue Hills, t, c, St. Agnes	4 6	3	2 1/2	0 4	0 0	May 1881
6000 Caron, t, c, Illogan	2 6	0	2	0 4	0 0	Oct. 1878
240 Devon St. Consols, c, a, Tavistock	9 7 1/2	24 1/2	23 1/2	52 1	0 0	Aug. 1881
4296 Dolcoath, c, t, Camborne	10 14	66	69 70	121 11	3 0	0 0
6400 East Pool, t, c, Illogan	0 9	3	37 1/2	23 17	0 0	May 1881
12500 Frongoch, t, c, Cardigan (11000 sh. iss.)	2 0	0	4 1/2	3 4	0 0	Jan. 1881
4000 Glasg. Car., c, (3000 sh. £1 pd., 1000 15s. pd.)	2 10	0	3 1/2	0 13	0 0	Aug. 1877
4000 Gossard and Merilyn Con., t, Flint.	2 10	0	3 1/2	0 5	0 0	Aug. 1877
6000 Great Laxey, t, c, Isle of Man	4 0	0	18	27 6	0 0	July 1881
4000 Green Hurth, t, c, Durham	0 6	0	7 1/2	0 18	0 0	Dec. 1880
4000 Grosvenor, c, Cardigan	2 0	0	3 1/2	0 15	0 0	May 1881
10000 Gunnsdale (Glitters), t, c	2 2	0	3 1/2	0 15	0 0	May 1881
2800 Isle of Man, t, c, Isle of Man	25 0	0	0	83 5	0 0	Sept. 1881
2000 Leadhills, t, c, Lanarkshire	6 0	0	2	0 15	0 0	Mar. 1878
4000 Lisburne, t, c, Cardigan	18 15	0	0	609 10	0 0	June 1881
10000 Mellanar, c, Hayle	2 0	0	4 1/2	1 8	0 0	July 1881
9000 Mellanar Mining Co., t, Wrexham	5 0	0	9 1/2	69 0	0 0	Feb. 1881
2000 Mining Co. of Ireland, c, t, c	7 0	0	2 1/2	24 3	0 0	Jan. 1880
4000 Mona, c, Anglesea	5 10	0	11	3 12	0 0	May 1881
1 1/2 North Hendre, t, c, Wales	1 5	0	3 1/2	0 8	0 0	May 1881
146 Ditto	1 5	0	3 1/2	0 8	0 0	May 1881
2000 North Levant, t, c, St. Just	13 6	0	4	4 16	0 0	Feb. 1881
5000 Penhalva, t, c, St. Agnes	3 17	6	1 1/2	3 17	0 0	Jan. 1881
6000 Penann, t, c, North Wales	5 0	0	4 1/2	0 10	0 0	Mar. 1878
12000 Phoenix United, t, c, Link	5 10	3	4 1/2	17 3	0 0	Mar. 1880
18000 Pr. Patrick, t, c, (als. 12000 pf. 10 p.c.)	1 0	0	0	0 18	0 0	July 1880
10000 Red Rock, t, c, Cardigan	2 0	0	1	0 4	0 0	Jan. 1878
12000 Roman Gravel, t, Salop	7 10	0	12 1/2	8 11	0 0	June 1881
4000 Rhylodan, t, c, Wales	10 0	0	0	0 1	0 0	July 1881
512 South Cardigan, c, St. Cleer	1 5	0	50	749 0	0 0	July 1881
6123 South Condurrow, t, c, Camborne	6 5	6	3 1/2	8 7	0 0	Apr. 1881
4000 South Darren, t, c, Cardigan	1 16	0	1 1/2	0 4	0 0	Apr. 1880
9500 South West Wales, t, c, Illogan	7 12	4	14 1/2	40 15	0 0	July 1880
110000 Tankerville Gt. Consols, t, Salop	10 10	0	1 1/2	0 16	0 0	Jan. 1877
6000 Tineroff, t, c, Pool, Illogan	11 10	0	16 1/2	50 13	0 0	Apr. 1881
15000 Van, t, c, Llandidloes	4 5	0	8 1/2	25 5	0 0	Feb. 1881
3000 West Chiverton, t, c, Penryn	21 2	6	1 1/2	0 10	0 0	Feb. 1878
512 West Tolgus, c, Redruth	95 10	0	16 1/2	16 17	0 0	Jan. 1879
4000 West West Wales, c, Camborne	27 0	0	22	223 0	0 0	Apr. 1878
6000 West Basset, c, Illogan	7 0	0	14 1/2	27 12	0 0	July 1881
12000 Wheel Crebor, c, Tavistock	2 4	0	3 1/2	0 12	0 0	Aug. 1881
1024 Wheel Eliza Consols, t, St. Austell	18 0	0	0	42 10	0 0	Aug. 1880
6000 Wheel Grenville, t, c, Camborne	15 0	0	8 1/2	0 7	0 0	Jan. 1881
4295 Wheel Killy, t, c, Agnes	5 4	6	2 1/2	12 18	0 0	Jan. 1881
3000 Wheel Peavor, t, Redruth	7 11	0	15	8 4	0 0	Aug. 1881

FOREIGN DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35500 Alamillos, t, Spain	2 0	0	1 1/2	2 2	0 0	Mar. 1881
30000 Almada and Tinto Consol., t, Spain	1 0	0	3 1/2	0 6	0 0	May 1878
20000 Australasian, c, South Australia	7 7	6	1 1/2	1 5	0 0	Oct. 1880
15000 Birdseye Creek, c, California	4 0	0	1 1/2	0 18	0 0	June 1881
20000 Cape Copper Mining, t, South Africa	7 0	0	4 1/2	42 7	0 0	May 1881
35000 Cesena Sulph. Co., Romagna, Italy	10 0	0	0	1 13	0 0	Aug. 1879
50000 Copiapo, c, Chile (44 shares)	3 8	0	2 1/2	1 13	0 0	Mar. 1881
70000 English and Australian, t, c, S. Aust.	2 10	0	1 1/2	2 18	0 0	Mar. 1880
25000 Fortuna, t, Spain	2 0	0	4 1/2	7 17	0 0	Jan. 1881
60000 Frontino & Bolivia, g, New Gran.	2 0	0	4 1/2	0 8	0 0	Jan. 1881
200000 La Plata, t, Leadville	2 0	0	1 1/2	0 7	0 0	July 1881
15000 Linares, t, Spain	3 0	0	6	18 14	0 0	Mar. 1881
56000 New Quebrada, c, Venezuela	5 0	0	4 1/2	0 5	0 0	July 1881
10000 Ditto, Debutentes	100 0	0	101	98 101	0 0	6 per cent.
30000 Oregon, g, Oregon, U.S. (pref. sh.)	4 0	0	0	0 2	0 0	Dec. 1880
50000 Panuco, c, Chile	4 0	0	5 1/2	0 13	0 0	Apr. 1881
25000 Panguit, g, Brazil (in 6000 £1 pd.)	0 10	0	0	0 1	0 0	Sept. 1880
100000 Pontgibaud, t, France	20 0	0	15	28 17	0 0	Dec. 1880
100000 Port Phillip, g, Olunes (42 shares)	1 0	0	3 1/2	1 14	0 0	Oct. 1880
40000 Richmond Consol., s, Nevada	5 0	0	17	12 1	0 0	July 1881
85880 Rio Tinto, c, Sp. Coup. Bds., Huella	10 0	0	102	100 102	0 0	5 per cent.
225000 Ditto, shares	10 0	0	20 1/2	20 1/2	0 0	Nov. 1880
40000 Santa Barbara, g, Brazil	0 10	0	2	0 11	0 0	Jan. 1881
1 00000 Scottish-Australian Mining Co., t	1 0	0	1 1/2	15	0 0	Nov. 1880
50000 Ditto, New	0 10	0	1 1/2	15	0 0	Nov. 1880
50000 Bentein, t, c, Artois, France	1 0	0	1 1/2	0 2	0 0	Jan. 1881
22500 Sierra Buttes, c, California	2 0	0	1 1/2	2 1	0 0	Oct. 1880
40825 Ditto, Plumas Eureka	2 0	0	2 1/2	2 10	0 0	Oct. 1880
230000 St. John del Rey (45 Stock and multiples dealt in)	215 225	0	0	5 p.c. for half year, Dec. 1880	0 0	Dec. 1880
2566 Tharsis, t, c, Mysore	10 0	0	43	6 10	0 0	Jan. 1881
20000 Tolima, g, c, Colombia	5 0	0	0	1 16	0 0	Apr. 1881
25000 Victoria (London), g, Australia	1 0	0	0	0 13	0 0	Feb. 1881
15000 Western Andes, c, Colombia	5 0	0	0	2 18	0 0	Apr. 1881
2100 W. Prussian (5500 pref. sh. £10 pd.)	10 0	0	10 1/2	4 2	0 0	Apr. 1881

Have made calls since last dividend was paid.

NON-DIVIDEND BRITISH MINES.

Shares.	Paid.	Last wk.	Clos. pr.
30000 Alston United, t, Cumberland	1 0	0	0
12000 Asherton, t, c, Carnarvonshire	5 0	0	3 1/2
10000 Atlantic, t, c, (res. shares 28,000)	1 0	0	1 1/2
36000 Basset & Buller Cons., t, c, Illogan	1 0	0	0
11583 Bedford Unit, t, c, Tavis. (£1 lib.)	0 8	0	1 1/2
30000 Blaen Caelan, t, c, Cardigan	3 0	0	3 1/2
30000 Blackburnbank & Gildersdale, t	0 5	0	3 1/2
30000 Bodidris, t, c, Denbighshire	1 0	0	1 1/2
30000 British, t, c, Wrexham	1 0	0	1 1/2
20000 Bwlch United, t, c, Cardigan	0 17	6	3 1/2
25000 Callington Consols, t	2 0	0	2 1/2
50000 Cambrian, t, c, Cardigan	2 0	0	0
6000 Carn Camborne, t, c, Camborne	0 8	0	3 1/2
20000 Carnarvon, t, c, Carnarvonshire	1 0	0	1 1/2
20000 Cathedral Cons., t, c, Gwent	0 5	0	1 1/2
20000 Central Fodale, t, c, Llanidloes	1 17	6	1 1/2
25000 Coed-y-Fedw & Pant-y-Buarth, t, Mold	1 0	0	1 1/2
24500 Cook's Kitchen, t, Illogan	30 4	9	17 1/2
15500 Court Grange United, t, c	1 0	0	0
6400 Crook Burn, t, c, Cumberland	0 12	6	3 1/2
14000 Crosswood Mining Lands, t	1 0	0	1 1/2
45000 D'Essey Mountain, t, c, Llanrwst	0 10	0	3 1/2
20000 Denbighshire Consolidated, t	3 0	0	3 1/2
12000 D'Essey, t, c, Durham	4 0	0	1 1/2
100000 Devon, t, c, Tavistock (15156 sh.)	0 1	0	1 1/2
60000 Devon Friendship, t, c, Tavistock	1 0	0	1 1/2
12000 Devon Great United, t, c, (27 shares)	1 0	0	1 1/2
20000 Devonshire, t, c, Lydford	1 0	0	0
50000 Drakeville, t, c, Calstock	1 0	0	1 1/2
10000 Dubby Syke, t, c, Durham	1 0	0	6 1/2
12000 East Blue Hills, t, c, St. Agnes	0 5	0	3 1/2
6000 East Botallack, t, c, St. Just	0 8	0	1 1/2
6144 East Caradon, t, c, St. Cleer	3 19	6	2 1/2
4000 East Chiverton, t, c, Penryn	10 4	8	2 1/2
30000 E. Craven Moor, t, c, Pateley Bridge	1 0	0	3 1/2
12000 East Crebor, c, Tavistock	0 11	6	3 1/2
15000 East Devon Cons., t, c, Buckfastleigh	2 0	0	2 1/2
30000 East Herodsfoot, t, c, Liskeard	1 0	0	1 1/2
20000 East Long Rake, t, c, Wales	1 0	0	0
21000 East Roman Gravel, t, c, Salop	0 15	0	1 1/2
18000 East Van, t, c, Llandidloes	5 0	0	1 1/2
4098 East Wheel Buller, t, c, Gwent	0 10	0	0
2098 East Wheel Lovell, t, c, Helston	15 3	8	2 1/2
12000 East Wheel Rose, t, c, Newlyn East	1 0	0	5 1/2
10000 Fortescue (Stannagong), t, c, War	1 0	0	0
12000 Gawton, t, c, Tavistock (24 shares)	1 16	0	1
14000 Glenroy, t, c, Isle of Man	4 0	0	3 1/2
30000 Gobbett, t, c, Dartmoor	1 0	0	1 1/2
10000 Goddards, t, c, Carnarvon	1 0	0	1 1/2
25000 Goodevere, t, c, St. Cleer	1 0	0	1 1/2
20000 Griffin, t, c, Carnarvon	1 0	0	0
20000 Great Dyffell (10000 sh. issued)	1 0	0	1 1/2
12000 Great Holway, t, c, Flintshire	1 0	0	5 1/2
100000 Great Polgoth United, t, c	1 0	0	1 1/2
6000 Great West Chiverton, t, c, St. Agnes	0 5	0	3 1/2
10000 Gwern-y-Mynydd, t, c, Flint (pref.)	4 0	0	1 1/2
7000 Gwydyr Amal, t, c, Llanidloes	1 0	0	3 1/2
6400 Harwood, t, c, Durham	1 0	0	0
12000 Herodsfoot, t, c, near Liskeard	0 12	9	3 1/2
18000 Hingston Down, c, Calstock	0 12	0	1 1/2
20000 Kirkstichell, t, c, (2000 sh. issued)	1 0	0	1 1/2
8000 Killbreth, t, c, Chacewater	4 0	0	3 1/2
25000 Kit Hill Gt. Cons., t, c, (27 sh.)	0 15	0	1 1/2
15000 Lady Ann, t, c, Llanarmon	1 0	0	1 1/2
30000 Lady Ashburton, t, c, Callington	1 0	0	1 1/2
15000 Lady Bertha, t, c, Tavistock	1 0	0	0
25000 Levant, t, c, St. Just	11 10	0	1 1/2
15000 Llandegla, t, c, Wales	1 0	0	1 1/2
10000 Lomax, t, c, Helston	1 0	0	1 1/2
5120 Lovell, t, c, Wendron	0 16	0	1 1/2
8000 E. Craven Moor, t, c, Pateley Bridge	1 0	0	1 1/2
6000 Medlyn Moss, t, c, Wendron	3 15	0	1 1/2
28000 Mid-Devon, t, c, (17000, 3s. 4d. pd.)	0 6	8	0
20000 Mona Consols, t, c, Anglesea	1 0	0	1 1/2
15000 Monkstoun, t, c, Devon	2 0	0	2 1/2
20000 Mostyn Consols, t, c, Flint	1 0	0	0
10000 Mynydd Goreddu, t, c, Cardigan	4 0	0	4 3/4
25000 Moray Day (18000 issued)	2 0	0	0
12000 Morfa Du, t, c, Anglesea	1 0	0	3 1/2
6144 Mount Carbis, t, c, Redruth	1 0	0	3 1/2
2400 New Cook's Kitchen, t, c, Illogan	24	0	6 1/2
2000 New Dolcoath, t, c, Camborne	3 0	0	0
10000 New Holmbush, t, c, Callington	2 0	0	0
8000 New Killy, t, c, St. Agnes	0 8	0	2 1/2
12000 New Penrose, t, c, Helston (14 sh.)	0 10	0	1 1/2
3500 New Tincroft, t, c, Lelant	6 0	0	3 1/2
2000 New Trumpet, t, c, Wendron	0 10	0	3 1/2
12000 New West Caradon, t, c, Liskeard	0 1	9	3 1/2
3000 New Wheel Peavor, t, c, Redruth	0 10	0	2 1/2

NON-DIVIDEND MINES—continued.

Shares.	Paid.	Last wk.	Clos.
35000 New Wye Valley, <i>l</i> , Montgomery	1 0	0	1 1/2
20000 North Alfred, <i>t</i> , <i>c</i> , Phillack	0 10	0	1 1/2
5328 North Busy, <i>t</i> , <i>c</i> , Blackwater	0 10	0	1 1/2
10000 N. D'Essey Mount, <i>t</i> , <i>c</i> , Carnarv.	1 0	0	1 1/2
53000 North Herodsfoot, <i>t</i> , <i>c</i> , Liskeard	0 6	6	3 1/2
6000 North Penstruthal, <i>t</i> , <i>c</i> , Gwent	1 14	6	2 1/2
2336 North Trekerby, <i>t</i> , <i>c</i> , St. Agnes	8 17	10	2 1/2
8000 Northern, <i>t</i> , <i>c</i> , Durham	1 0	0	1 1/2
40000 Okel Tor, <i>t</i> , <i>c</i> , <i>a</i> , Calstock	1 0	0	1 1/2
80000 Old Shepherds, <i>t</i> , <i>c</i> , Cornwall	0 5	0	0
12000 Pandora, <i>t</i> , <i>c</i> , Carnarvon	2 0	0	0
11812 Pant-y-Mwyn, <i>t</i> , <i>c</i> , Mold	2 0	0	2 1/2
45000 Parys Corporation, <i>t</i> , <i>c</i> , Anglesea	1 0	0	0
7500 Pateley Bridge, <i>t</i> , <i>c</i> , Yorkshire	1 0	0	0
6000 Pedn-an-dren, <i>t</i> , <i>c</i> , Redruth	3 0	0	0
12000 Pelyn Wood, <i>c</i> , Lanvrey	5 0	0	4 3/4
600 Pendares United, <i>c</i> , Camborne	8 0	0	2 1/2
30000 Penhalva and Barton, <i>t</i> , <i>c</i> , St. Columb	1 0	0	1 1/2
12000 Pen-y-Osred, <i>t</i> , <i>c</i> , Flintshire	1 0	0	1 1/2
15000 Perran Consols, <i>t</i> , <i>c</i>	1 0	0	1 1/2
10000 Pioneer, <i>t</i> , <i>c</i> , Wales	1 0	0	0
10000 Polrose, <i>t</i> , <i>c</i> , Cornwall	0 12	0	0
10000 Port Nip, <i>t</i> , <i>c</i> , Carnarvon	1 0	0	2 1/2
6000 Prince Royal, <i>t</i> , <i>c</i> , <i>s</i> , <i>l</i> , St. Agnes	1 0	0	1 1/2
12000 Prince of Wales, <i>c</i> , <i>s</i> , Calstock	0 11	6	1 1/2
30000 Silver Hill, <i>t</i> , Callington	0 10	0	0
40000 Stridgate, <i>c</i> , <i>c</i> , Horrabridge	1 0	0	1 1/2
50000 So. Cambrian, <i>t</i> , <i>c</i> , Cardiganshire	1 0	0	1 1/2
30000 South D'Essey Mountain, <i>t</i> , <i>c</i>	1 0	0	0
35000 So. Devon Unit, <i>t</i> , <i>c</i> , Buckfastleigh	1 0	0	1 1/2
3000 South Penstruthal, <i>t</i> , <i>c</i> , Gwent	1 7	6	3 1/2
6000 South Roskeer, <i>t</i> , <i>c</i> , <i>c</i> , Camborne	1 0	0	1 1/2
6000 South Tolcarne, <i>t</i> , <i>c</i> , Camborne	4 6	6	2 1/2
40000 South Wheal Crebor, <i>t</i> , <i>c</i> , Tavistock	1 0	0	1 1/2
2043 South Wheal Crofty, <i>c</i> , Illogan	19 7	0	1 1/2
4000 St. Just United, Cornwall	3 5	0	0
40000 Tamar, <i>t</i> , <i>c</i> , Bearlston	1 0	0	1 1/2
8400 Teasdale, <i>t</i> , Durham (pref.)	1 0	0	0
20000 Tin Hill, <i>t</i> , St. Stephens	1 0	0	2 1/2
10000 Treacle, <i>t</i> , <i>c</i> , Illogan	1 0	0	1 1/2
12040 Treveltha Lennard, <i>t</i> , <i>c</i> , Illogan	0 6	6	3 1/2
12000 Treveince Consols, <i>t</i> , <i>c</i> , Gwent	0 8	0	0
6000 Trugo, <i>c</i> , St. Columb	0 8	0	0
10000 Ty'n-y-Fron, <i>t</i> , <i>c</i> , Cardiganshire	1 0	0	1 1/2
35000 Un. Van & Glyn, <i>t</i> , <i>c</i> , (17500 pref. sh)	1 0	0	1 1/2
1000 Vaughan, <i>t</i> , <i>c</i> , Cardiganshire	10 0	0	0
15000 Vincent, <i>t</i> , <i>c</i> , Altarnun	1 0	0	1 1/2
20000 Walkham United, <i>t</i> , <i>c</i> , <i>c</i> , Tavistock	1 0	0	0
12000 West Ashdon, <i>t</i> , <i>c</i> , Carnarvon	1 0	0	2 1/2
12000 West Cadogan, <i>t</i> , <i>c</i> , Anglesea	0 9	9	1 1/2
3000 W. Craven Moor, <i>t</i> , <i>c</i> , Pateley Bridge	0 5	0	0
12000 West Crebor, <i>c</i> , Tavistock	0 5	0	0
10240 West Devon Consols, <i>c</i> , Calstock	1 0	0	1 1/2
10000 West Godolphin, <i>t</i> , <i>c</i> , Breage	0 10	0	1 1/2
12000 West Holway, <i>t</i> , <i>c</i> , Flintshire	1 0	0	2 1/2
6000 West Kitty, <i>t</i> , <i>c</i> , St. Agnes	0 12	0	6 8 1/2
20000 W. Lisburne, <i>t</i> , <i>c</i> , (12 sh.) Cardigan	1 0	0	1 1/2
3000 West Mary Ann, <i>t</i> , <i>c</i> , Menheniot	1 5	0	1 1/2
6000 West Pateley, <i>t</i> , <i>c</i> , Breage, L. Yorkshire	0 0	0	0
6000 West Polbreen, <i>t</i> , <i>c</i> , <i>c</i> , St. Agnes	0 2	0	1 1/2
5190 West Poldice, <i>c</i> , St. Day	5 10	0	1 1/2
10000 West Vor, <i>t</i> , <i>c</i> , Helston	2 0	0	1 1/2
2048 West Wheal Frances, <i>t</i> , <i>c</i> , Illogan	29 8	3	1 1/2
12000 West Wheal Pevoor, <i>t</i> , <i>c</i> , Redruth	2 10	6	1 1/2
3000 West Wye Valley, <i>t</i> , <i>c</i> , Montgomery	3 0	0	0
4000 Wheel Agar, <i>c</i> , Illogan	14 6	0	1 1/2
5000 Wheel Basset, <i>c</i> , Illogan	5 8	0	1 1/2
3000 Wheel Cragg, <i>c</i> , Illogan	1 0	0	2 1/2
12000 Wheel Comafes United, <i>t</i> , <i>c</i> , Gwent	0 17	0	1 1/2
2585 W. Comf., & No. Tres., <i>t</i> , <i>c</i> , Gwent	0 2	0	1 1/2
50000 Wheel Elizabeth, <i>t</i> , <i>c</i> , Cornwall	1 0	0	1 1/2
5000 W. Fortune, <i>t</i> , <i>c</i> , <i>a</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</i> , <i>s</i> , <i>r</</i>			